RISC user

The magazine for users of Acorn RISC

APRIL 1994
Volume 7 Issue 5
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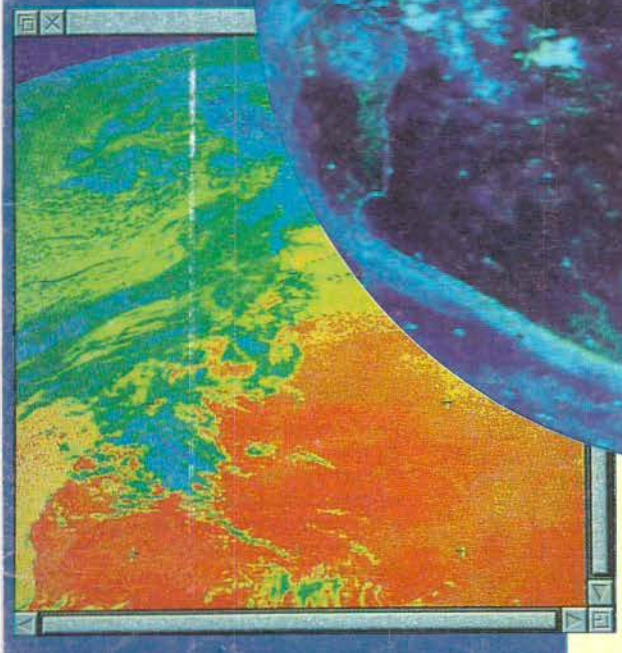
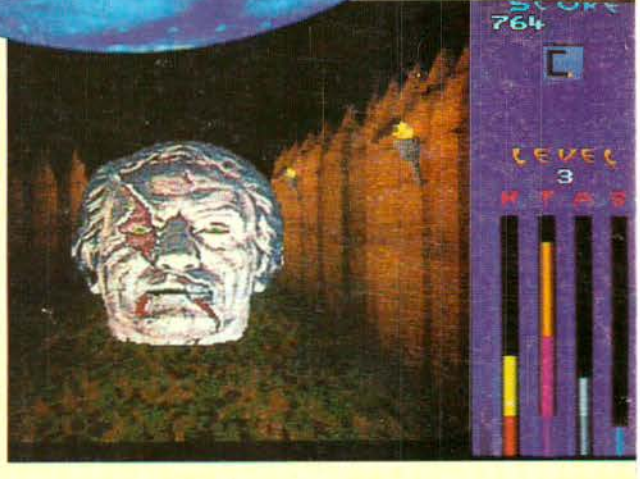
Window on the World





Group Survey: Spreadsheets

Games Roundup

APRIL 1994
VOLUME 7 ISSUE 5

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THE MAGAZINE FOR USERS OF ACORN RISC COMPUTERS

RISC User is published by RISC Developments Limited.

Co-Editors:
Dr Lee Calcraft, Mike Williams
Assistant Editor: Kristina Lucas
Technical Editor: Tony Patterson
Technical Asst: Paul Ashmore
Production Asst: Sheila Stoneman
Advertising: Sarah Shrive
Subscriptions: Helen O'Sullivan
Managing Editor: Sheridan Williams

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RISC Developments Ltd. ©1994
117 Hatfield Road, St Albans,
Herts AL1 4JS.
Tel: 0727 843600 Fax: 0727 860263
Telesales: 0727 840305

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LOOK OUT FOR NEXT MONTH'S SPECIAL SUPPLEMENT TO COINCIDE WITH THE SPRING ACORN USER SHOW

From time to time, when I sit down to compose the contents of the next RISC User editorial, a topic or theme readily suggests itself. This month the brain cells have taken a holiday, but there is quite a bit of news relevant to RISC User which I would like to impart.

ACORN USER SHOW, HARROGATE

The second Acorn User Show takes place at the Harrogate International Centre from 22nd - 24th April 1994 (see this month's News pages). Following the success of last year's event, the first at this venue, there are high hopes for the next. Acorn itself has a large stand, and many of the best known names in the Acorn world will be there.

RISC User will have its own stand (stand 69) adjacent to the Acorn theatre. We expect to have the latest issue of RISC User, with some exciting news, plus recent back issues of magazines and discs. We will also have a selection of other RISC User products and the more popular discs from the RISC User Public Domain Software Library.

We are also hoping to have two new products for sale at the show: a new publication providing a friendly tutorial introduction and overview to Ovation, RISC Developments' popular DTP package, and a new and very comprehensive Wimp Library for Basic programmers. We can give no more information as yet, but come along to our stand at Harrogate and find out what we have on offer.

MAGAZINE DISC OFFER

All readers were circulated earlier this year with a special offer on disc subscriptions. If you haven't taken advantage of this yet, there is still time to do so. Just take out a year's magazine disc subscription for £50 and we will send you your choice from the following three offers entirely free:

OFFER 1 - Any two out of the following three games:
Gods
Lotus Turbo Challenge
Chess (David Pilling)

or:

OFFER 2 - Pipedream 3

or:

OFFER 3 - A set of ten blank discs (*specify HD or standard discs*)

Existing disc subscribers can extend their subscription by a further year, if they wish, to take advantage of this offer. We are sorry, but because of higher postage costs, only option one is available to overseas subscribers unless an additional payment of £5 is included to cover the higher postage costs involved.

COMPETITION WINNERS

Last Christmas we held a competition in the form of a word search puzzle with a first prize of an Acorn A3010 and monitor. As might be expected we received a very large number of entries. The first correct entry drawn out of the 'hat' came from:

Andrew Stewart
of Welwyn Garden City

Runners up, with a free twelve month's magazine disc subscription were:

Ryan Li from Erith, Kent
Jan de Poorter from Gent, Belgium
Nigel Cook from Pershore, Worcs.
John Fox from Aston, Sheffield
Leslie Gardner from Farnham Surrey

Our congratulations to all the prize winners, and our thanks to Acorn Computers Ltd for donating the main prize for the competition.

M.C.W.

RISC USER BINDERS - build your copies of RISC User into a complete reference library

We can supply attractive B5 size binders in a cyan blue with silver lettering for storing your copies of RISC User magazines. Each binder will comfortably hold a complete volume set of RISC User magazines (ten per year plus index). Each binder costs £4.20, or you can order two together for just £7.00. Post and packing is £1 for one, £1.50 for two (overseas subscribers check post rate 'a' page 70).

We believe that a collection of RISC User magazines forms an excellent reference library of all you need to know about your Archimedes, and the binders enable you to keep these magazines in a handy reference format.

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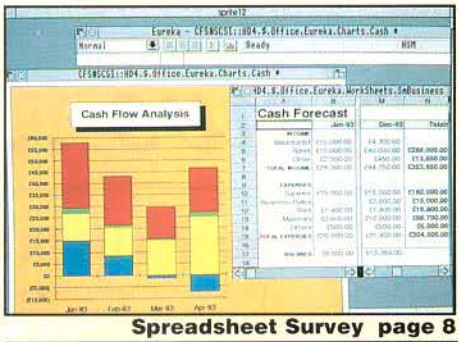

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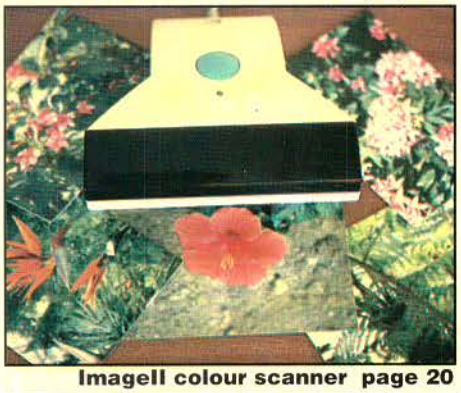

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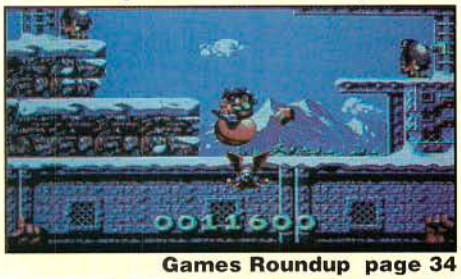

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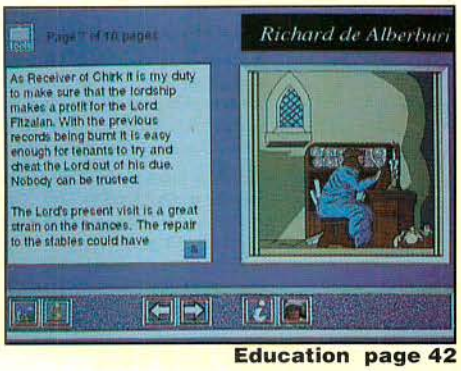
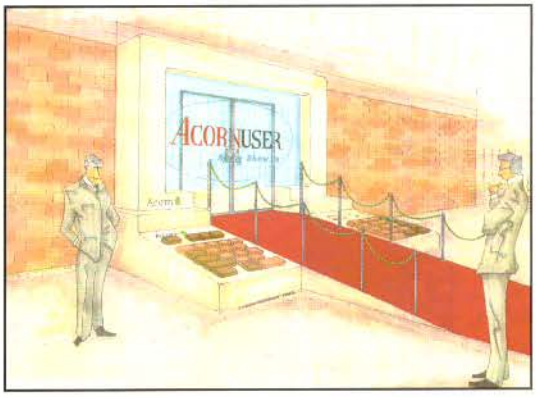

Richard de Alberburi
As Receiver of Chirk it is my duty to make sure that the lordship makes a profit for the Lord Fitzalan. With the previous records being burnt it is easy enough for tenants to try and cheat the Lord out of his due. Nobody can be trusted.
The Lord's present visit is a great strain on the finances. The repair to the stables could have

Education page 42

News ...

ACORN USER SPRING SHOW '94

The Acorn User Spring Show will take place from the 22nd to the 24th of April at the Harrogate International Centre, and is set to take this historical town by storm. Building on the success of the first Acorn User Spring Show in 1993, the 1994 show will be bigger and better and offer visitors the opportunity to see, try and buy a wide range of hardware and software. In addition, there will be the added attraction of a free theatre programme, competitions, surprise features and celebrity visits, as well as themed catering, free expert advice, and just about everything else you could possibly want.



The theatre programme includes presentations by Computer Concepts, Acorn User Magazine, Icon Technology, Lindis International, Longman Logotron, Oak Solutions, Topologika, Vertical Twist, Sherston Software, and possibly a very special presentation by Acorn Computers themselves.

Safesell Exhibitions, the show's organiser, claims that the first inkling that visitors will have that this show is something different will be the massive computer monitor standing outside the entrance to the show. As they walk through the screen they will enter the exciting and fascinating world of Acorn computing.

For anyone interested in information technology in education, the show will provide an ideal opportunity to check out informally the latest products and services, and as an added practical demonstration of the projects for which Acorn computers can be used, a school team will be publishing the show Newspaper with editorial, interviews and news items gathered at the show. Using RISC Development's *Ovation* DTP software and a selection of hardware supplied by Beebug, the team will compile the newspaper over the three days of the event, and visitors will be able to see how the children quickly pick up some of the journalistic skills of Fleet Street.

The games enthusiast will not leave the show empty-handed. In addition to a number of new releases including Oregan Development's *Sally and Wally*, the show will feature a special presentation of the Channel 4 *Crystal Maze* game, published by Sherston Software. Visitors should also set aside some time to take part in the *Human Computer Game*. The game requires entrants to search the exhibition hall for hidden symbols and by carefully noting down the information on the entry form, there is an opportunity to win a fabulous prize of hardware and software.

For the business user, the show will be the perfect hunting ground for accounting, presentation graphics and productivity applications, ranging from professional word processors and database management systems, to spreadsheets and stock control software. The show will demonstrate to the business user that the Acorn market can offer a wide variety of business computing solutions.

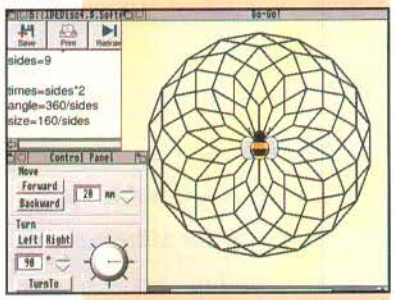
Exhibitors at the Acorn User Spring Show '94 include: Beebug, RISC User Magazine, Acorn User Magazine, Computer Concepts, Colton Software, Minerva, Oregan, Spacetech, GamesWare, Krisalis, Fourth Dimension, Clares, Topologika, Oak Solutions, Longman Logotron, Icon Technology, Vertical Twist, Wyddfa Software and Acorn Computing Magazine.

The show takes place at the Harrogate International Centre in North Yorkshire over the period 22nd to 24th April 1994 inclusive, and will be open from 10am to 5pm daily. Advance ticket prices are: Adults £4.00 (£5.00 at door), Under 16 £2.00 (£2.50 at door), and Family £10.00 (£13.00 at door). Access and Visa card holders can phone 0737 814713 for ticket orders, and further information can be obtained from Safesell Exhibitions Ltd, Market House, Cross Road, Tadworth, Surrey KT20 5SR.

LIBERATE YOUR PRINTER

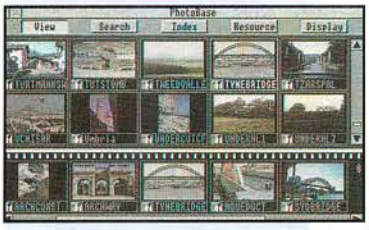
Clares has announced the release of *Spooler*, an application which intercepts all printing from Desktop applications and stores it on hard or floppy disc. *Spooler* then prints the documents in the background, returning control of the computer to you much faster than normal. *Spooler* can also produce extra copies of documents without the application having to do any more work. It will also queue documents, so you can send several documents to the spooler and leave the printer to print them as fast as it can whilst you carry on working. *Spooler* will work with any type of printer except direct-drive laser printers. *Spooler* costs £15 inc. VAT and is available from Clares Micro Supplies, 98 Middlewich Road, Rudheath, Northwich, Cheshire CW9 7DA, tel. 0606 48511.

GO-GO! - GEOMETRY THE EASY WAY



New from N.W. Semerc is *Go-Go!* for the Archimedes, a simple turtle graphics program for teaching numbers, geometry and logic to special needs, primary and secondary pupils. The package features a variety of ready-made scenes and a range of pointers to which the pupil must give instructions in order to move around a scene and reach a particular goal. The pointers can take various forms, such as arrows, vehicles or bees, and pupils can import their own Draw file scenes to navigate around. *Go-Go!* costs £40 ex. VAT plus £3 p&p, and is available from N.W. Semerc at 1 Broadbent Road, Watersheddings, Oldham OL1 4HU, tel. 061 627 4469.

A PHOTO LIBRARY FOR THE ARC



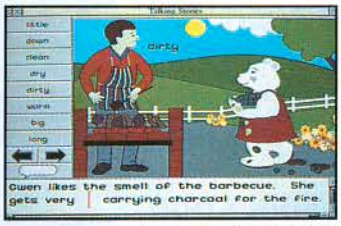
Landscapes from Longman Logotron is a CD-ROM resource containing more than 2000 high quality colour photographic images illustrating aspects of the natural and built environment. Drawn from locations on every continent, the images on the CD cover a wide variety of topics including: architecture, economic activity, infrastructure, geography and nature. The images are fully cross-referenced and can be searched, browsed displayed and exported using the *PhotoBase* image database application supplied with the CD. Features of *PhotoBase* include keyword indexing of the images and free-text searching. *Landscapes* costs £49 ex. VAT and p&p, and this includes a licence to use the images for any purpose within the purchasing site. Longman Logotron can be contacted at 124 Cambridge Science Park, Milton Road, Cambridge CB4 4ZS, tel. 0223 425558.

IMPROVE YOUR CD-ROM PERFORMANCE

A new utility that will be of interest to all CD-ROM drive owners is Eesox's *CDFast*. An intelligent CD-ROM cacheing utility for use with any CD-ROM drive and any version of CDFS, *CDFast* will enhance the performance of virtually all CD-ROM titles and applications, and in some cases may improve CD-ROM performance by 30%-45% or more. *CDFast* costs £25 ex. VAT For further details, contact Eesox at 5 Hillfield Road, Comberton, Cambridge CB3 7DB, tel. 0223 264242.

GWEN THE MISCHIEVOUS BEAR

Wyddfa Software will be launching its *Talking Stories* at the Spring Show. These programs are a series of interactive talking story books for children beginning to read. Four stories about a mischievous bear called Gwen - *Gwen's Nose*, *Gwen's Tummy*, *Gwen at the Fair*, and *Gwen Goes to School* - are being produced. Each story is presented to the child one page at a time, and the child can listen to the whole sentence on each page, or to individual words within the sentence. One word is missing from each written sentence, which the child can fill in from a words column on the left of the screen, thus encouraging the child to look at the sentence as well as to listen to it. Each story is supplied with a colour story book. The stories can be purchased individually for £20 inc. VAT or £50 inc. VAT for all four.



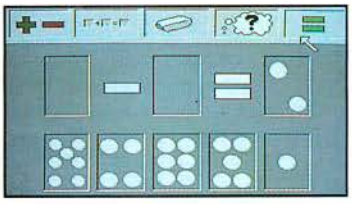
Wyddfa is also running a competition for Welsh-speaking primary school children. The task for the competition is to create an 8 page A5 booklet in Welsh with original text and graphics, using any Acorn Archimedes computer. The school responsible for the winning entry will receive about £100 of software of its own choice, and Wyddfa Software will produce a 'talking' version of the winning booklet for the winning school using sampled speech. Every school that enters will receive a free copy of a *Talking Story* in Welsh. For more information on the *Talking Stories* and the competition, contact Wyddfa Software at 3 Preswylfa, Llanberis LL5 4LF, tel. 0286 870101, fax 0286 871722.

STRIKER KICKS OFF ON THE ARC

GamesWare has announced that it will be releasing the Archimedes version of the best-selling football simulation, *Striker*, in the Spring. The game provides 64 international teams all containing real life players. Each team is made up of sixteen players and eight formations from a sweeper system to an all out attack. Additionally, *Striker* contains a choice of six different strategies ranging from defensive to aggressive. With an effective isometric perspective, *Striker* allows the player to watch an entire third of the pitch, so team mates can be spotted as they dive into the 18-yard box to receive a cross. It is claimed that *Striker* offers an immense range of differently skilled opponents, excellent control and near-perfect team action. Commenting on the signing, GamesWare Boss Simon Lovesey said "With the World Cup in 1994 we were keen to include the best football simulation within the GamesWare range. With *Striker* we believe we are onto a winner." He went on to say "*Striker* also illustrates how we are committed to having the most comprehensive range of entertainment products in the Acorn market, already covering arcade games, graphical adventure games, cheat programs, control pads and now sports simulations." GamesWare can be contacted at Unit 26, The Bartlett, Hamble, Hants SO3 5RP, tel. 0703 456523.

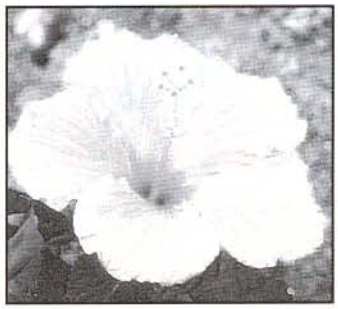
TALKING RHYMES FROM TOPOLOGIKA

Exhibiting for the first time at the Acorn User Spring Show will be the educational software house Topologika. On display - apart from its geography and maths pack, *Navigator*, which won the Educational Technology Silver Award (primary) at BETT '94 - Topologika will also be showing several new titles including *Talking Rhymes* and *Number Tiles*. *Talking Rhymes* is a pack of four nursery rhymes-cum-jigsaws. Designed to help children read and learn to play games, the series includes Humpty Dumpty, Little Miss Muffet, Little Jack Horner and Georgie Porgie, with four more rhymes coming later this year. The pack of four costs £40 ex. VAT, or each rhyme can be purchased separately for £12 ex. VAT. *Number Tiles* is a pack of eleven number activities designed to let children practise addition, subtraction, multiplication and division at Key Stage 1 and early Key Stage 2. First shown at BETT '94 where it attracted considerable attention, *Number Tiles* will get its first real public airing at Harrogate, and will retail for £30 ex. VAT. Topologika Software are at P.O.Box 39, Stilton PE7 3RL, tel. 0733 244682.



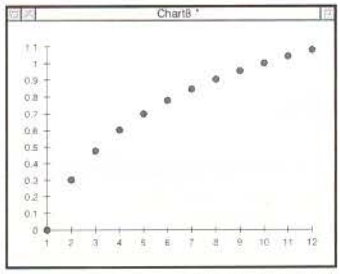
THE GOLD 'N EAGLE

Wild Vision has announced a specially priced bundle combining its Eagle M2 multimedia card and Computer Concepts' ColourCard Gold graphics accelerator. The combination of these two cards allows users to display true colour, full motion video at TV-like quality on the Acorn Desktop for less than £500, as well as offering a wide range of other features. The ColourCard Gold, reviewed in RISC User 7:4, provides a 16-bit per pixel Desktop, allowing more than 32,000 colours on screen at once, with the result that true colour pictures can be realistically displayed by Desktop applications. The Eagle M2, reviewed in this issue, provides real-time 24-bit video digitising facilities, stereo sound sampling and MIDI integration. The price of the combined package is £498 ex. VAT, representing a saving of £50 over buying the cards separately.



As a further incentive to Eagle purchasers, Wild Vision is also offering existing Acorn Replay DIY card owners an upgrade path. A rebate of £99 is available against the purchase price of the Eagle M2 for anyone trading in their old DIY card. Both special offers are available until the 30th April 1994. For further details, contact Wild Vision at 15 Witney Way, Boldon Business Park, Boldon Colliery, Tyne and Wear NE35 9PE, tel. 091 519 1455.

LOW-COST SPREADSHEET FOR EDUCATION



Longman Logotron has announced the release of *Advantage*, a new spreadsheet specifically designed for use in schools. Longman Logotron claims that *Advantage* provides the answer for users who want unrivalled spreadsheet performance at a budget price, and that it "introduces children to the key features of a modern spreadsheet - automatic calculations, point and click formula construction and graphic charting." Features of *Advantage* include worksheet search and replace, data sorting, saving worksheets and charts as Draw files, a print-to-fit option which allows a spreadsheet of any size to be printed on an A4 page, and a choice of Pie, Area, Column, Line and Scatter graphs. *Advantage* retails for £49 ex. VAT and postage and packing, and is available from Longman Logotron at 124 Cambridge Science Park, Milton Road, Cambridge CB4 4ZS, tel. 0223 425558.

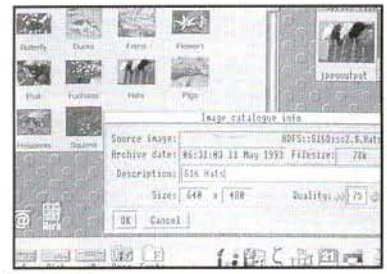
SILENT TYPING WITH THE SILENT KEYBOARD

Castle Technology, whose *Ergo-keyboard* was reviewed in RISC User 7:3, has recently released the promised 'click-free' version of the keyboard and the A3000 keyboard adaptor. Similar in design to the *Ergo*, the *Silent-keyboard* is a high quality PC keyboard, with a design life of 10 million operations, which has been modified to be compatible with the Archimedes. Unlike the *Ergo* however, its keys do not click when depressed - a feature that might appeal to users who have grown up with the BBC and Archimedes. Both keyboards are suitable for the entire range of Acorn 32-bit systems, including the A4, although A3000 users will also need the A3000 *Ergo-adaptor*. The adaptor consists of a small PCB which is installed inside the A3000 - no soldering is required - and an adaptor cable which enables either keyboard to be plugged into the A3000's mouse socket. The *Silent-keyboard* costs £95 ex. VAT, and the A3000 *Ergo-adaptor* £40 ex. VAT when purchased individually, or £30 ex. VAT when purchased with either keyboard. Further details can be obtained from Castle Technology, Ore Trading Estate, Woodbridge Road, Framlingham, Suffolk IP13 9LL, tel. 0728 621222, fax 0728 621179.

CALLING ALL BUDDING HEATH ROBINSONS

Minerva Software has launched *PrimeSolver*, a problem solving program for the Archimedes. Reviewed in this issue, *PrimeSolver* is a totally interactive, educational and fun application for the creation and solving of mechanical puzzles - ideal for budding Heath Robinsons or Blue Peter presenters! The software is designed to promote group discussion and stimulate goal-oriented logical thinking, as well as to illustrate the physical interactions between moving objects under various circumstances. *PrimeSolver* costs £79.95 ex. VAT and a demonstration disc is available for £5 ex. VAT. For further information contact Minerva Software, Minerva House, Baring Crescent, Exeter EX1 1TL, tel. 0392 437756.

IMAGEBANK EXTENDED



A new version of the popular 24-bit image archiving software, *ImageBank*, will be released by Irlam Instruments at the Acorn User Spring Show. New features include support for Draw files, faster JPEG decompression, dithered 16-bit output for photographic quality in graphic enhancer screen modes, and a demo mode providing an automatic sequence of selected images. The price will stay the same at £25 ex. VAT and postage. Irlam Instruments has also developed a limited edition version for use in hardware and software bundles by other developers. Irlam Instruments can be contacted at the Brunel Institute of Bioengineering, Brunel University, Uxbridge, Middlesex UB8 3PH, tel. 0895 811401.

SIBELIUS 7 TOP AWARD NOMINATION

Computer Shopper, the UK's top-selling computer magazine, has nominated Sibelius Software's *Sibelius 7* music processing system for its 1994 Award as *Best Software of the Year on Any Platform*. For more information, contact Sibelius Software at 4 Bailey Mews, Auckland Road, Cambridge CB5 8DR, tel. 0223 302765.

MORLEY DOES A DOUBLE REVOLUTION

Morley Electronics has released an upgraded version of its *Revolution* CD-ROM drive. With a transfer rate of 300K/s, the drive is twice as fast as the original version. The new system is still competitively priced at £299 ex. VAT. A hybrid version of this drive is also available to allow the user to connect the device to either an Acorn computer or a PC. The cost of the hybrid version is £379 ex. VAT. Morley Electronics can be contacted at Morley House, West Chirton, North Shields, Tyne and Wear NE29 7TY, tel. 091 257 6355.

Special News Item:
Games Cartridge Adaptor Sneak Preview

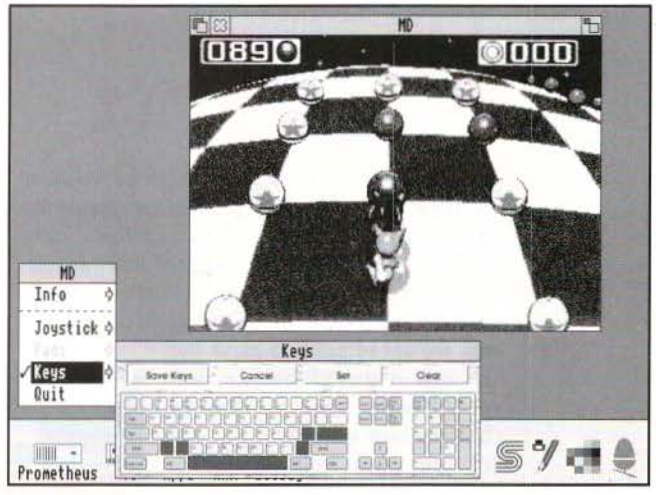
Nathan Micholey finds that to be this good really does take ages.

For a long time Acorn users have looked jealously upon the Atari, Amiga and games console markets, wondering why so few of the top selling games ever crossed the divide to their machine. The emphasis has always been on software developers to convert the software written for other machines to run on the Archimedes in native mode. Now, a new player in the Acorn market looks set to change all that if its market research can prove that there is sufficient demand to sell a *Sega* style cartridge slot expansion to Arc games players.

The add-on is being developed by a subsidiary of one of the major console games developers who does not wish to be named until firm plans are announced to market it. We were allowed to try out a pre-production version, which is currently being used to test the reaction of selected Arc users. Although the case design has not been finalised, the electronics are, and the software needs only a few minor bug fixes and cosmetic improvements. The test version therefore runs almost as well as the production machine will, if it ever sees the light of day that is. There is a minimum hardware requirement of 2Mb RAM and an ARM650 or ARM6 machine. The current version plugs into a standard podule slot, but an adaptor for A30x0 and A4000 machines will become available if the product goes on sale. For now, the software comes on disc, but this will be included in the podule ROM in production versions, so it will appear in the *Apps* directory and may be run from there.

Installing the unit is no more difficult than fitting the podule, and plugging the cartridge module into a D-connector at the rear. You can then insert any normal *MegaDrive* cartridge into the module's slot and start the *MD* application, which puts an icon on the icon bar. The application menu allows you to set up the control options; support is provided for *Acorn* and *Leading Edge* joysticks or keyboard control, as well as control by *Sega* style games controllers which can be plugged directly into the cartridge unit.

Clicking on the icon will start the game. From then on, the screen gives almost no indication that the game is not actually running on a MegaDrive. The Arc's hardware is not quite as flexible as the Sega's in being able to display an arbitrary set of 256 colours, but unless you had seen the game run on the Sega, you would probably not notice the difference, which is very small. Unfortunately, the system will not work correctly on graphics cards such as *ColourCard* and the *State Machine* graphics cards, as it needs to access the VIDC chip directly. The sound emulation is impressive, even more so if you use



the phono sockets provided on the back of the podule which bypass the Arc's somewhat severe audio filtering. In this respect, the system is indistinguishable from the real thing. On an ARM 3 system I experienced no problems at all playing *Mortal Kombat*, *Sonic 2*, *Aladdin* and *Lipra 1*, and I was thrilled to see that all the speed and excitement are just as evident on the Arc as they are on the real thing. I was unable to try it out on an ARM650 system, but I am informed that, with some minor tweaks that are currently being done to the software controlling the blotter chip, it will perform just as well, and soak up all the action.

If all this seems too good to be true, then you had better skip this paragraph. The company is looking at adapting the technology to produce a combined *Sega* and *Nintendo* cartridge adaptor, and possibly a podule which will allow *Game Boy* cartridges to be slotted straight into it.

So when can we expect to see the cartridge system on sale for the Arc? Ivor Gotiou, project leader for the development said, "I can't give a definite answer, but if our market research shows the project to be viable, you could be playing *Sonic 3* on your Arc by April 1st next year.

Prices won't be fixed for some time, although a sub £100 tag is hoped for. By the time of release, learner drivers for CDFS that will enable *Mega-CD*s to be played should be available at extra cost.

Group Survey: Spreadsheets

Confused as to which Archimedes spreadsheet is best for your needs? Alan Highet has all the information you need to make a reasoned choice.

In its simplest form a spreadsheet gives you a number of boxes, or cells as they are commonly known, laid out in columns and rows. Into these cells numbers can be entered and various mathematical operations can then be performed on them. All of these operations can be carried out with the aid of pen and paper but the one main advantage that spreadsheets have is that by changing only one figure you will see the whole set of figures recalculate almost instantly.

Visicalc, for the Apple II, was effectively the world's first spreadsheet. Things have moved on a long way since then with, amongst other things, the introduction of graphical front ends, something Archimedes users have enjoyed for some time. But fundamentally the spreadsheet still does the same job.

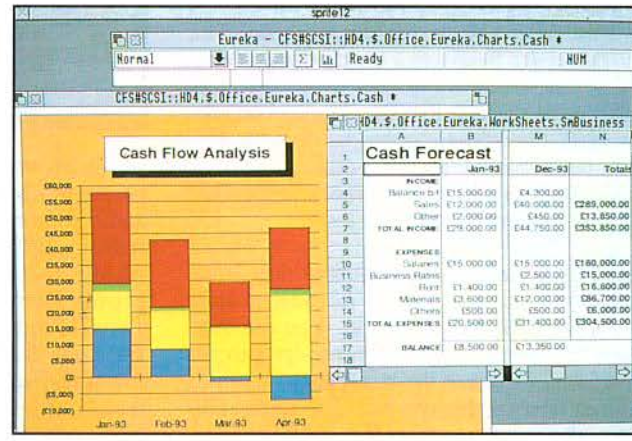
DTP reporting, 3D spreadsheets and graphing are all new but they are only additions to the original concept. The only original idea I have seen recently is *Cleansheet*, for the PC, which does away with a grid of cells and works instead as a form of visual spreadsheet. You place inputs, calculators and results boxes on a screen and link them together to produce the result.

The Acorn world has not been inundated with spreadsheets, but there are some very powerful pieces of software available and at half the price of comparable PC products. The latest version of Lotus 123 for the PC platform is now £365 ex. VAT.

DTOSHEET

Reviewed originally in RISC User 4:1, this spreadsheet, part of Minerva's Desktop Office, was then considered only just acceptable for the market. It has now been improved with the addition of many more commands such as the constant PI, and operators such as >, <, =, <>, >=, <=, Not, And, and Or. These all allow much more flexible spreadsheets to be designed and enable the user to answer the question 'what if?', which is, after all, the main use of spreadsheets. Seventeen new functions have also been added including AVG, LOG, MOD, RAND and most importantly IF. The maximum size of the sheet has been increased to 55 columns by 99 rows but this is still very miserly given that multiple sheets are not possible. There are no charting facilities built in, but data may be exported to DTOchart where it may be displayed as a Bar, Line, Scatter or Pie graph with comprehensive control provided over layout.

EUREKA 2



Eureka

Reviewed in RISC User 6:5, Eureka (from Longman Logotron) has been upgraded to version 2. Amongst other things this brings the much missed index to the now enlarged manual and a Draw file function keystrip. Printing is also improved, with scale-to-fit and a window zoom. There are many other additions, but the main one is the inclusion of macros, which seem almost to be a must in any modern spreadsheet. Like its main rivals, Eureka has a formula bar for data entry, and shortcut icons for alignment, quicksum, graphs and styles. Unlike the rest, the formula bar is separate, and that means that there is only ever one bar on screen regardless of the number of sheets that are visible - very useful with medium

resolution monitors. Different parts of the worksheet may also be viewed by splitting the view horizontally and/or vertically with each section having its own scroll bar.

Names may be defined for a block of data which makes for more meaningful formula. Thus:

(total = goods + vat)

is preferable to:

(f12 = sum(d1d10) + sum(e1e10))

especially when you need to refer back to formulae months later. Charts are displayed in their own resizeable window and cannot be embedded in the related document, which does make them a little more unwieldy, but on the plus side there is a new feature to create graphs from multiple selections. Links between dependent worksheets may be changed globally, but they are now also filing system independent and can reference up and down directories with the use of ^ to signify a higher directory level.

Normally, when copying cells, the formula is copied along with the result, but in Eureka the result may be copied as an absolute value. Replicating cells in a series is enhanced with the ability to use date formats as well as the more usual number progressions.

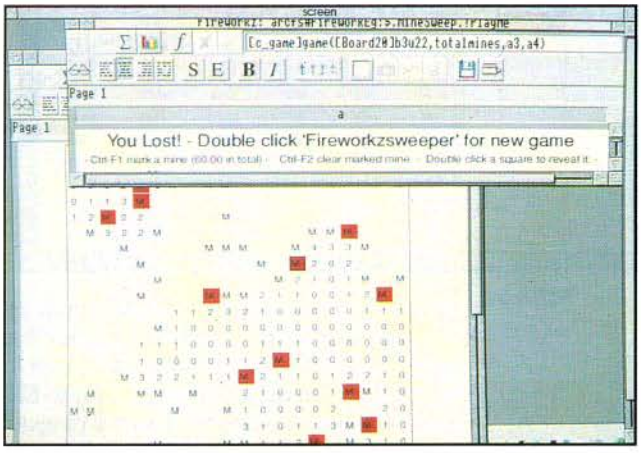
RESULTZ

First reviewed in RISC User 7:1, Resultz has already been upgraded with document scaling, print to fit and search and replace, along with other minor improvements. Curiously, the search and replace still only works on text and not on formulae.

Built on the success of Pipedream 4, it has nearly all the features of its predecessor and adds many more of its own. Being designed as part of an integrated suite of programs (Fireworkz) has not held it back in any way, and has given it all the style features of a modern word processor as well. It is also the only spreadsheet here that allows you to resize every cell individually, although this should be done sparingly to avoid confusion. Like Eureka, the working window may be split horizontally and vertically to aid the viewing of large sheets, and multiple views are also possible. Resultz has almost 200 functions and the most sophisticated data entry of any of the current Archimedes spreadsheets.

Live charts appear within the document, and styles include bar, pie, X-Y, line and overlay. Most of these may be displayed in 3D with full control of overlaps, colours, fonts and spacing. Additionally, custom fills may be used for bar charts enabling you to personalise your graphics.

Styles are used to apply attributes to text or numbers in a similar manner to word processors, but may also include row width and column height information. Draw files and sprites may be added to the sheet as a backdrop to brighten up your figures, and these may be referenced to save on file storage. This is particularly useful if you are using the same backdrop file in many documents, as only one copy need be stored on your hard disc.



Fireworkz and Resultz can both edit the same files. They can also play a minesweeper style game

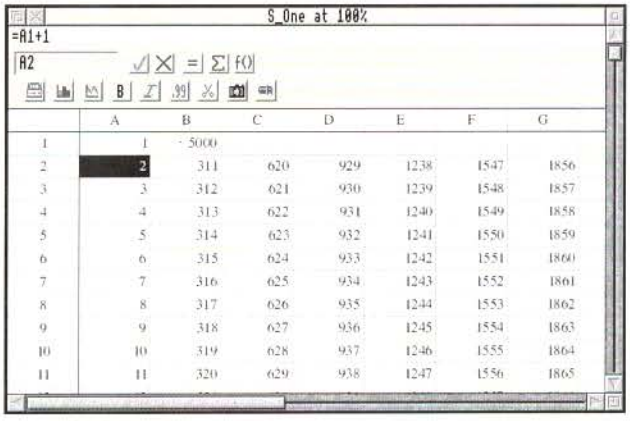
Very comprehensive help is given to enable you to print out exactly what you want, with the printer driver settings being read for margins, which may then be displayed on screen. Further control may be used to position your document manually on the page, and a range of pages may be printed. Headers and footers may be added with the facility to have different layouts on opposite pages.

SCHEMA 2

Originally reviewed in RISC User 4:2, Schema received good reviews, but all the other major spreadsheets had left it behind, until now. It has been a long time coming, but Schema 2 is here in a greatly altered version. Gone is the strange use of two cursors, and in has come a much more useable spreadsheet. I have only had a brief time to look at the Beta test version of this product, but what I have seen looks promising, although not everything was implemented.

Like the other three main spreadsheets, a more graphical approach has been taken, with the familiar icon bar giving access to the more widely used functions (such as SUM), and to the print and

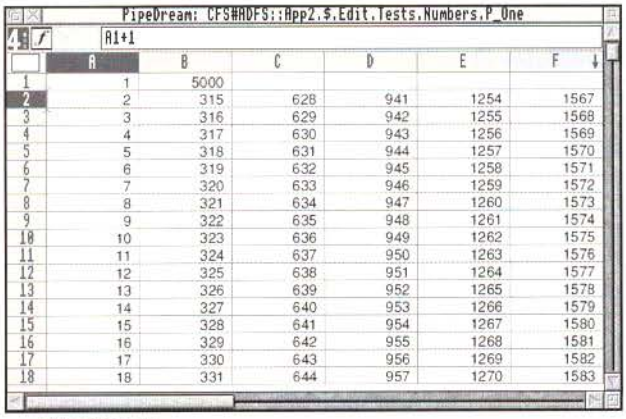
graphing menus. Above that is the input window which, like the others, accepts typed input, mouse clicks or formulae pasted from the function list. This list provides 78 functions which cover most needs, but where Schema differs from the others is the facility to include custom macros within the function menu itself, in the macro menu or even as an icon at the top of the sheet.



	A	B	C	D	E	F	G
1	1	5000					
2	2	311	620	929	1238	1547	1856
3	3	312	621	930	1239	1548	1857
4	4	313	622	931	1240	1549	1858
5	5	314	623	932	1241	1550	1859
6	6	315	624	933	1242	1551	1860
7	7	316	625	934	1243	1552	1861
8	8	317	626	935	1244	1553	1862
9	9	318	627	936	1245	1554	1863
10	10	319	628	937	1246	1555	1864
11	11	320	629	938	1247	1556	1865

Schema

A separate macro editor is available which lets you enter your macro in a text editor rather than in the more restrictive spreadsheet style used by others. The language used is very similar to BBC Basic and, once written, the macro is compiled with any errors being highlighted. It is then ready to use. There is even a facility to create boot macros which will open a sheet, or sheets, request some information from the user, paste the data into a sheet and print out the results before closing the sheet down without the user being able to alter the spreadsheet. For the less ambitious amongst you there is also the ability to record macros and save them for later use.



	A	B	C	D	E	F
1	1	5000				
2	2	315	628	941	1254	1567
3	3	316	629	942	1255	1568
4	4	317	630	943	1256	1569
5	5	318	631	944	1257	1570
6	6	319	632	945	1258	1571
7	7	320	633	946	1259	1572
8	8	321	634	947	1260	1573
9	9	322	635	948	1261	1574
10	10	323	636	949	1262	1575
11	11	324	637	950	1263	1576
12	12	325	638	951	1264	1577
13	13	326	639	952	1265	1578
14	14	327	640	953	1266	1579
15	15	328	641	954	1267	1580
16	16	329	642	955	1268	1581
17	17	330	643	956	1269	1582
18	18	331	644	957	1270	1583

Pipedream

A problem that has arisen from the more graphical front ends used in modern software is that less of the actual sheet is visible on screen, and one thing I like in Schema, which is also available in Pipedream, is the ability to turn off the row and column headings along with the button bar.

There is a new view option, but no facility to split the screen as in Resultz or Eureka, a feature which I think is sometimes more useful than a new view as it as it keeps everything tidy.

Within limits Schema may be configured to your liking, with different icons on the icon bar, changes to the menu structure, and different keyboard shortcuts. This does make for a very flexible product, but I question whether the option to make every version of Schema different is a good idea.

Like Pipedream and Resultz, Schema allows the use of pictograms in graphs, as well as providing all the other main graph types you would expect but, unlike the others, 3D exploded pie charts are an option which I understand is a much sought after requirement for the education market. One little niggle that I did notice occurred when I tried to type in some new numerical data over existing data. In all the other spreadsheets the old data is replaced by the new, but in Schema the data is added to the end. So typing 16 into a cell containing 14 gives the result 1416, although a new user might have less of a problem with this.

Readers should note that the spreadsheet capability of Acorn's Advance is very largely based on the original Schema.

PIPEDREAM 4

Pipedream has been around for some time now, and this version brought us charts for the first time, including the use of pictograms, or penguin graphics as Colton like us to call them. Although its layout is not the most pleasing to look at, nor the easiest to use, Pipedream still has immense power and speed, and should not be dismissed. It has the unique advantage of letting you program the function keys to hold not only commonly used text but more importantly, functions and custom macros. This allows you to carry out very complicated procedures at the press of a button. It does not have a full WYSIWYG screen but an outline font may be used as a base style instead of the system font. Alternative fonts may be added to cells individually, and Draw files may be embedded in cells along with live charts.

Virtually all the menu options may be accessed by keyboard shortcuts, which makes the

program very quick to use for the seasoned owner, although a little daunting for the casual user. Pipedream also has the advantage that it can be used as a word processor, and has some database capabilities. Although Colton has now released Resultz, it intends to continue to support Pipedream with upgrades as and when required.

PRODUCT INFO

Product *Desktop Office*
Supplier *Minerva Systems*
Minerva House, Baring Crescent,
Exeter EX1 1TL.
Tel. 0392 437756
Fax 0392 421762
Price *£93.94 inc. VAT*

Product *Eureka 2*
Supplier *Longman Logotron*
124 Cambridge Science Park,
Milton Road,
Cambridge CB4 4ZS.
Tel. 0223 425558
Fax 0223 425349
Price *£143.35 inc. VAT and p&p*

Product *Public Domain Discs*
Supplier *A.P.D.L.*
39 Knighton Park Road
Sydenham
London SE26 5RN
Tel. 081 778 2659
Price *£1.50 per disc*

Products *Pipedream 4, Resultz*
Supplier *Colton Software*
2 Signet Court, Swanns Road
Cambridge CB5 8LA.
Tel. 0223 311881
Fax 0223 312010
Price *£116.32 inc. VAT*
(for either product)

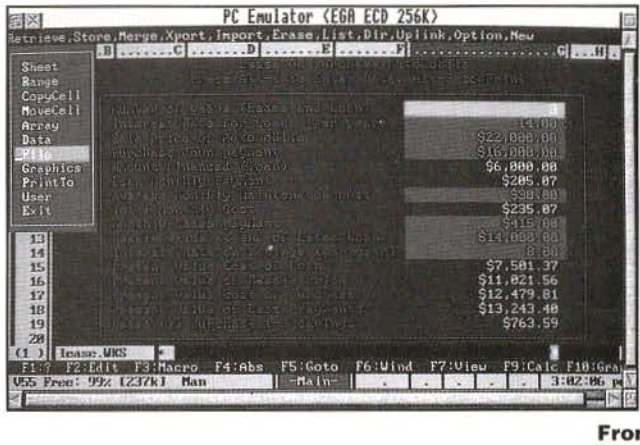
Product *Schema 2*
Supplier *Clares Micro Supplies*
98 Middlewich Road,
Rudheath, Northwich,
Cheshire CW9 7DA.
Tel. 0606 48511
Fax 0606 48512
Price *£158.62 inc. VAT*
Upgrade from original Schema
£79.31 inc. VAT

PROSHEET

We had also hoped to include a product call *Prosheet* from Silicon Vision which seems to have all the main functions of the top of the range products but at half the price. Unfortunately Silicon Vision didn't wish their product to be compared with the competition and were unwilling to provide a review copy. I can say no more about it but it might be worth investigating.

	Pipedream 4 v4.13	Schema 2 v2.00	Eureka 2 recalculate	Resultz v1.07
Background recalculation	✔	✔	✘	✔
Charts	✔	✔	✔	✔
Pictograms	✔	✔	✘	✔
Mixed charts	✔	✔	✘	✔
3D charts	✔	✔	✘	✔
Charts in worksheets	✔	✔	✘	✔
Page breaks	✔	✔	✘	✔
WYSIWYG	85%	95%	90%	100%
Split windows	✘	✘	✔	✔
Multiple views	✘	✔	✔	✔
Scale views	✘	✔	✔	✔
Styles	✘	✔	✔	✔
User group	✔	✘	✘	✔
Load/save text/CSV/Lotus	✔	✔	✔	✔
Save as drawfile	✘	✔	✔	✘
Arrays in cells	✔	✘	✔	✔
Custom functions	✔	✔	✘	✔
Number of functions	160+	80+	150+	190+
Cell borders	✘	✔	✔	✔
Named cells/area	✘	✘	✔	✔
Sprites in sheet	✘	✘	✔	✔
Drawfiles in sheets	✔	✔	✘	✔

Table 1. Comparison of features



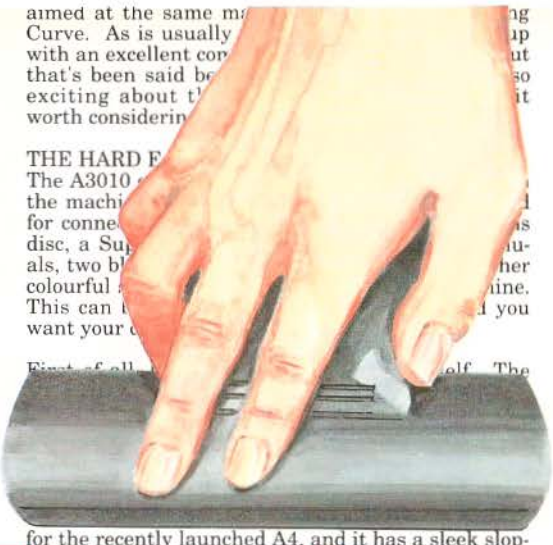
PUBLIC DOMAIN AND SHAREWARE

From the Public Domain: As Easy As

In preparing for this review, I wrote to a number of Public Domain libraries and asked them to send me their best spreadsheet. They unanimously agreed that this was SSS. It is the only multi-tasking

aimed at the same ma… Curve. As is usually … with an excellent cor… that's been said be… exciting about t… worth considerin…

THE HARD F…
The A3010 … the machi… for conne… disc, a Su… als, two bl… colourful … This can … want your …



First of all … self. The …

for the recently launched A4, and it has a sleek sloping design which is much more comfortable than the previous Acorn mouse. The mouse is also coloured warm grey to match the case.

On the back of the computer are a TV modulator socket, two joystick ports, a monitor socket (15 pin, as on the A5000), a headphone output, serial and parallel ports and the power switch. The mouse connector is also on he back of the case, which is far more convenient than the socket under the A3000, and there's a removable flap at the back where one mini expansion card will fit (the same cards that fit the A3000 will fit the A3010).

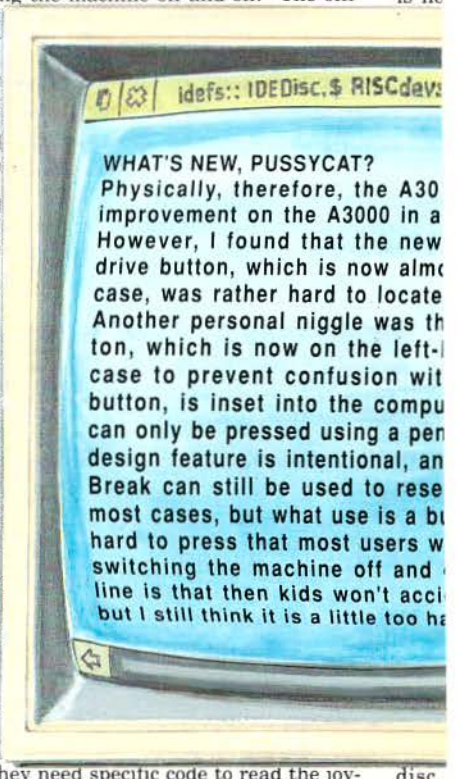
WHAT'S NEW, PUSSYCAT?

Physically, therefore, the A3010 represents an improvement on the A3000 in a number of ways. However, I found that the newly designed disc drive button, which is now almost flush with the case, was rather hard to locate without looking. Another personal niggle was that the reset button, which is now on the left-hand side of the case to prevent confusion with the disc drive button, is inset into the the machine in most cases, but what use is a button which is so hard to press that most users will opt for simply switching the machine off and on? The official line is that… but I still think…

The new TV … that the compu… screen using t… for expensive d… the A3010 to n… ly usable, but … colours crawl… patchy. Smal… yellows and cr… being close to … computer for l… eyes pop out. … that produced … need to buy a … micro showed … comparison, a… quality of your … play is perfect … not quite up to … buy a monitor … pected bonus … put through yo… the neighbours …

The two joystic… 9-pin joysticks … operating sys… which provides … joysticks. For … SWI number … which simply … state of the joy… existing games … stick port, as they need specific code to read the joysticks. Quest for Gold, which is provided with the Iamily Solution (see below) makes use of the joysticks, as do most recent games. One small niggle is that the joystick ports are not numbered on the computer's case, but that's not a major problem.

There are a couple of other interesting points about the hardware side of the A3010. There is only one


idefs:: IDEDisc.$ RISCdevs
WHAT'S NEW, PUSSYCAT?
Physically, therefore, the A30
improvement on the A3000 in a
However, I found that the new
drive button, which is now almo
case, was rather hard to locate
Another personal niggle was th
ton, which is now on the left-
case to prevent confusion wit
button, is inset into the compu
can only be pressed using a pen
design feature is intentional, an
Break can still be used to rese
most cases, but what use is a bu
hard to press that most users w
switching the machine off and
line is that then kids won't acci
but I still think it is a little too ha

from… mac… is no…

disc, … need … to cli… when … inse… This … prese… A500… A4,

Optical character recognition system

Sleuth is a new Optical Character Recognition (O.C.R.) package which converts human readable images of text into machine readable form. It processes a scanned image of printed material and converts it into an ASCII file which may be further processed using a text editor or word processor.

Sleuth is ideal for converting magazine articles, newspaper cuttings, legal documents, program listings, other resource materials etc. etc.

Sleuth v1.0 is a low-cost entry package into OCR and produces excellent results on a range of typefaces and sizes. It is the first in a planned family of products which will take OCR on Acorn machines to full professional level. Any future OCR products will be available as upgrades to existing users.

Sleuth is very easy to use - simply drag your scanned image into the input window, select the area to be converted and click to start. The ASCII conversion is displayed in the output window from where it may be saved. Sleuth is fully multitasking allowing you to correct any mistakes in the converted text while it is still converting the rest of the text.

What Sleuth can convert

Sleuth has been trained with a popular set of fonts (including most PostScript fonts) and can handle type sizes between 9 and 24 point. Other fonts will work too, but with reduced accuracy. Sleuth v1.0 only recognises fonts in their regular styles i.e. not bold, italic, condensed, nor does it recognise accented characters.

Sleuth can achieve an accuracy of over 97% on recognised fonts using good quality 400 dpi scanned images, but the accuracy is reduced if the image is of poor quality or if the font is unrecognised. Conversion speed is between 80 and 250 wpm depending on the hardware in use.

For special applications, RISC Developments will consider training Sleuth on new fonts supplied by the user. A charge will be made for this service.

Equipment required

You will require a hand-held or flatbed scanner which produces mode 18 mono sprites. The minimum resolution required is 200 dpi, but for best results you need 300 or 400 dpi. Sleuth will run on a 1Mb machine, but for 400 dpi scanners we recommend a machine with 2Mb or more.

Sleuth

Members Price
£41.65
+ £2 carriage + VAT

RISC developments

RISC Developments Ltd
117 Hatfield Road, St. Albans, Hertfordshire AL1 4JS
Telephone 0727 840303 Fax. 0727 860263

Please phone for a detailed specification, and for education and site licence prices.

spreadsheet I've seen in the public domain. It works very well and is stable, but it is not very large, and does not have many functions nor any of the DTP facilities of the main commercial spreadsheets.

For those of you with a PC Emulator there is a much wider choice and the main contender in this field is AsEasyAs. Lotus 123 is accepted as the definitive standard for modern spreadsheets in the PC marketplace, and AsEasyAs is a PD clone of that. It does not have a graphical front end but is in every other way a very powerful spreadsheet with as many functions as you are likely to need.

COMPARING SPEED (TABLES 2 & 3)

Speed comparisons are very subjective because, firstly, it really does depend on what you want to do with your spreadsheet and, secondly, it is surprisingly difficult to find something that all spreadsheets calculate in the same manner. In the end I came up with three tests. The first two tests (Table 2) are self explanatory, a simple maths recalculation and a test of text loading. The third test (Table 3) is a complicated lookup using a number of dependent documents. No comparison could be done with Schema 2 as the lookup macros are not yet finished.

It is fairly obvious that Resultz is significantly slower than the rest, but a large percentage of this is must be attributed to the graphical front end, which slows down the loading, and I know Colton are aware of this and are working to improve the situation. This is also shown in the amount of memory required to hold the documents.

All timing shown were done on a 4Mb A310 with ARM2. Comparing the speeds on an A410 with ARM3 showed that Resultz tended to utilise the cache more efficiently and was almost 100% faster than with the ARM 2 processor yet the others were only 80% - 85% faster. Again this shows that timings can be very misleading and the only real way to judge a product is by using it. After all, who runs benchmarks in real life!

	Recalculate 5000 cells	Load & recalculate 5000 cells	Load & display 2107 text cells	Minimum memory used
Pipedream 4	22 secs	91 secs	6 secs	864K
Eureka 2	36 secs	51 secs	6 secs	1152K
Resultz	16 secs	60 secs	19 secs	896K
Schema 2	9 secs	25 secs	15 secs	992K

Table 2

	Memory used	Time to load & finish	Time to recalculate	Time to load & return control
Pipedream 4	512K	220 secs	177 secs	53 secs
Eureka 2	544K	177 secs	94 secs	177 secs
Resultz	1536K	286 secs	202 secs	227 secs

Table 3

CONCLUSIONS

There is a great diversity of spreadsheet software available, so in making a choice you need to decide what you require the package to do.

For a simple introduction to spreadsheets the PD sheet SSS will suffice, but only just. Next comes DTOsheet which is a vast improvement on the original version, but is not that powerful as it is severely limited in size and has no support for outline fonts. Against that is the fact that it is part of an integrated suite of programs and is relatively cheap.

Finally we come to the big four, and here there is very little to choose between them. They all have their own unique features, and all work in a similar manner. If I have to stick my neck out then here is my choice. Eureka 2 is probably the weakest of the four on features and it doesn't recalculate in the background, but it is the cheapest and has a good macro language. Next comes Pipedream 4, which is the oldest of the four and is not as WYSIWYG as the rest, but it is fast and has a vast range of keyboard shortcuts which make it quick to use once you are proficient with it.

After that comes Schema 2, which even in the Beta version I tested seems to have a lot in its favour - it certainly has the nicest macro editor available - but I will have to wait for the finished version to be assured of its full potential. Finally, and my choice for day to day use, is Resultz. It still hasn't got the speed of screen update that I'm used to with Pipedream, but it has a true WYSIWYG screen display and does everything possible to make sheet creation easy and error free. Added to that it has the greatest number of features at the lowest price of these four.

If you want a cheap powerful spreadsheet and you have a PC Emulator then I wouldn't hesitate to choose something like AsEasyAs or InstaCalc from the public domain. A full working version, with a disc based manual, is available for the cost of a disc, and full registration will cost you £45 which includes the latest version and a printed manual. They may not run as fast because of the Emulator but they will do everything you want of them. If, at a later stage, you do buy a commercial RISC OS spreadsheet then these will all import Lotus 123 files, so your sheets can be transferred, albeit with a little bit of editing.

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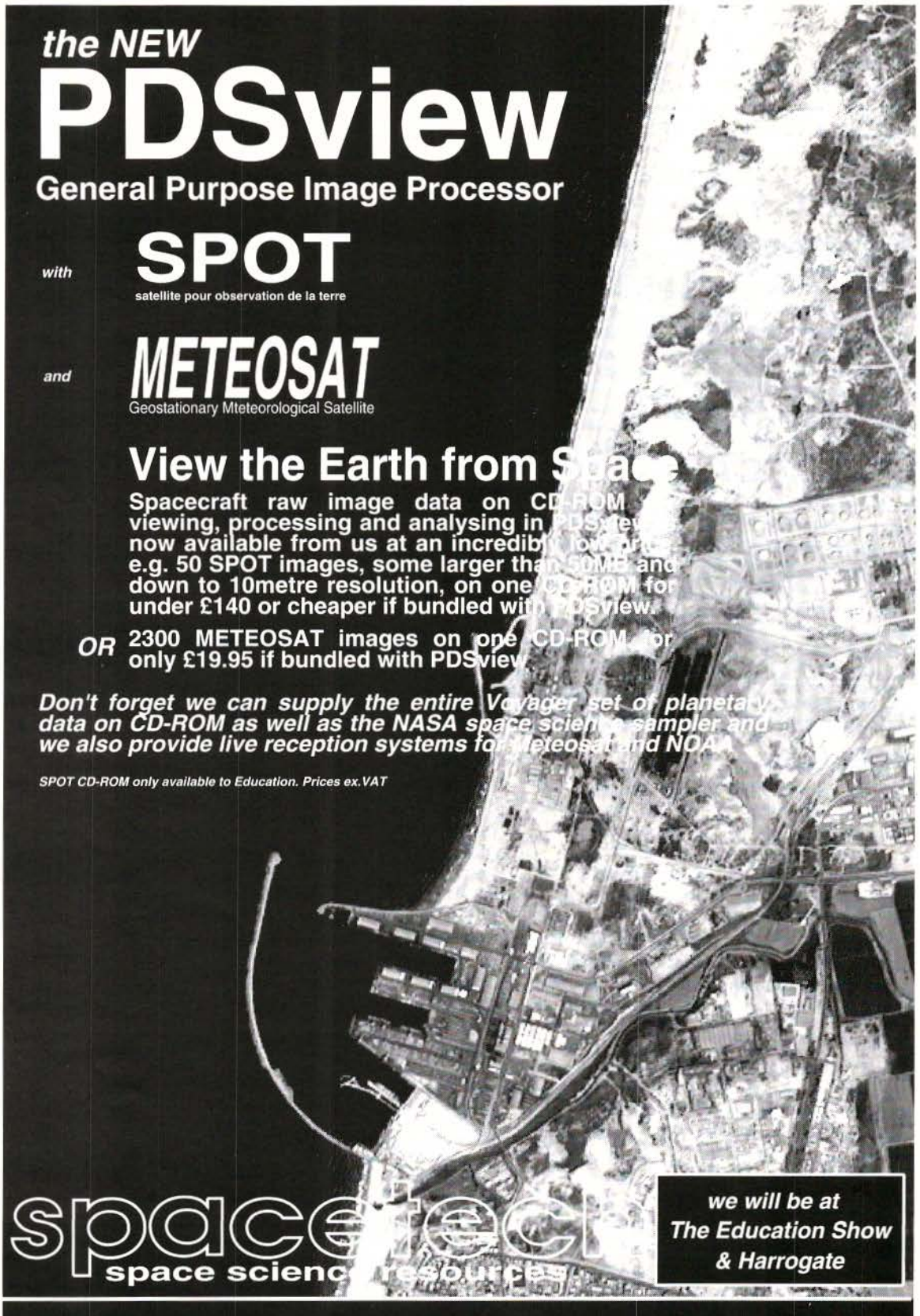

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Window on the World

Mike Williams explores the world of weather satellites using his Arc and with some help from Spacetech.

We have all seen today's slick weather forecasters on TV, with their fancy charts and symbols backed up by those animated sequences as billows of cloud roll effortlessly across the British Isles. But did you know that it is perfectly feasible, though at a price, to receive and display the same weather sequences in the comfort of your own home? All you need is an Archimedes, the wherewithal to receive pictures beamed down from a satellite, and suitable software to make the whole thing go.

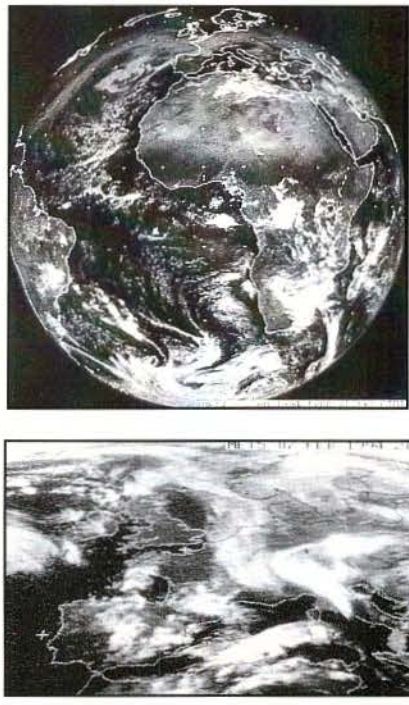
The specialist in this field (as far as the Archimedes is concerned) is a small company called Spacetech based down in Portland, Dorset. Spacetech kindly loaned all the equipment I needed, and provided the software, an application known as *The Weather Desk*.

BACKGROUND INFORMATION

There are generally two types of weather satellite in use, and you can use either. First of all there is *Meteosat*. This is a so-called geo-stationary satellite which orbits the Earth above the equator at a height which means that its movement precisely matches the Earth's own rate of rotation. Thus to an observer on Earth, the satellite appears to remain stationary. However, that also means that its view of Earth is fixed - the rest of the world is invisible, and even the bits near the edges are horribly distorted. To overcome this there are currently three such satellites in operation, Meteosat 4 on the Greenwich meridian, GMS covering the Pacific at 120° east and GOES over the Americas at 120° west. From Britain you can only receive Meteosat 4, but this also re-transmits some of the images from the other two satellites as well, so world-wide coverage is perfectly feasible.

Meteosat orbits at an altitude of 32,000 miles, some 30° above the southern horizon, and a 90cm dish is needed to pick up the signal at a frequency in the 1.7GHz band. A simple fixed-frequency receiver then connects the dish to the interface which fits into the back of the Archimedes.

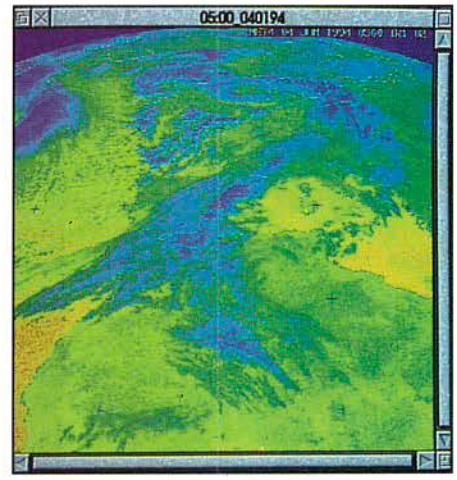
The second type of weather satellite is a polar orbiting one, which traces out an orbit which takes it over the two poles. The orbit processes so that consecutive orbits trace out paths (relative to the surface) which gradually move eastwards. Over a period of time, a polar orbiting satellite thus passes over all of the Earth's surface, but is accessible from any one location just twice a day. Two satellites of this type which can be readily received are NOAA11 and NOAA12, but there are many other satellites which it is possible to detect. Polar orbiting satellites have much lower orbits,



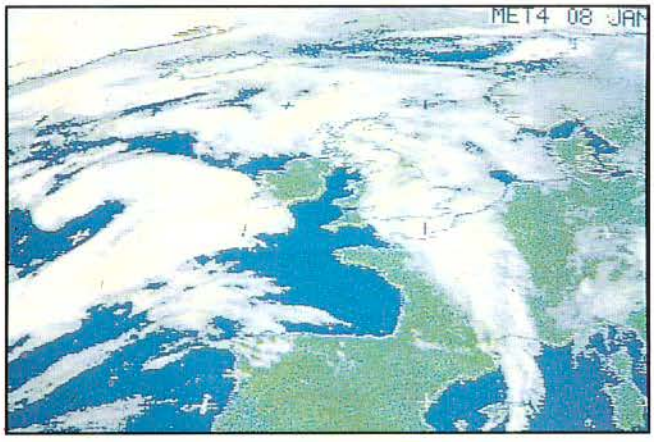
Infra-red Meteosat of NW Europe (enhanced contrast - bottom), USA/Carribean (as received - left), and Whole world (false colour - top)

typically just 500 miles up, so potentially can give much more detailed pictures that those obtainable from Meteosat. Such satellites operate at VHF frequencies around 137MHz and only need a standard cross dipole type aerial.

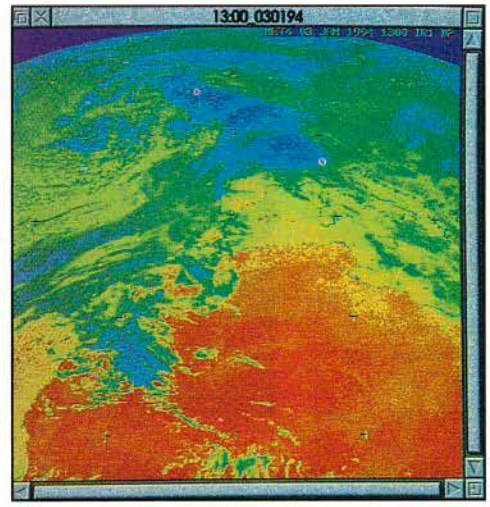
All the equipment for receiving both types of satellite transmission is made by Timestep, another British company based in Newmarket. Spacetech supply a podule for the Archimedes into which either receiving system may be plugged (but not both at the same time). Images received from both systems are processed by the same software application. An additional application, *Kepler*, is supplied for predicting the timing of polar orbiting satellites.



Meteosat colour temperature enhanced infra-red images of North Africa (top - midday, bottom - 5am).



Meteosat infra-red NW Europe false colour image



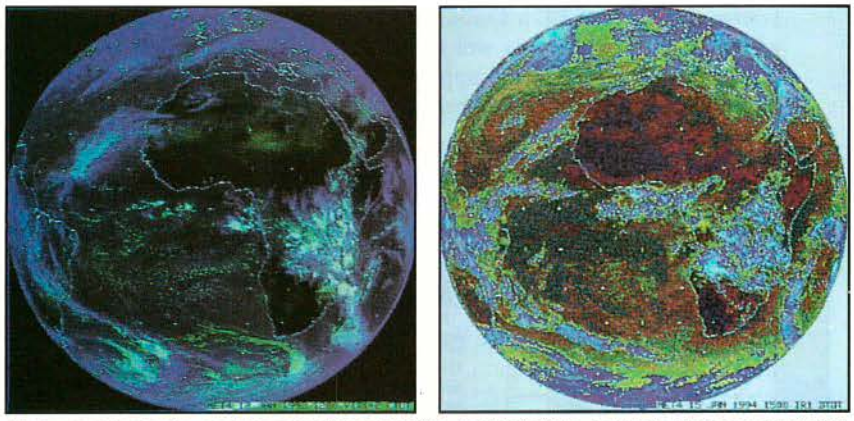
USING THE WEATHER DESK - METEOSAT

The Weather Desk is a fully multi-tasking application. It is a complex piece of software, though it is designed to be as straightforward in use as possible. While there are many parameters which can potentially be adjusted, a number of files are also included which contain the information needed to 'tune' the Weather Desk to the characteristics of the more popular satellites. When first set up you also need to enter your own longitude and latitude, and calibrate the Weather Desk to optimise reception and conversion of the incoming signal.

Despite its immense distance, it is the Meteosat images which are the easiest and probably the most rewarding to receive. Because the satellite is geo-stationary, it is programmed to broadcast a set sequence of images throughout each period of 24 hours. The visible hemisphere of the Earth is divided into nine roughly square views, transmitted according to a timetable which is built into the Weather Desk. The British Isles appear in the top centre area designated D2. You simply use the main menu to bring up the *Scheduler* window: select the particular picture you want to receive, open a window ready for the image, and then just sit back and wait. The Weather Desk switches on the receiver some 10 to 15secs before the scheduled start time; it detects the start of the picture which is then built up line by line in the window on screen.

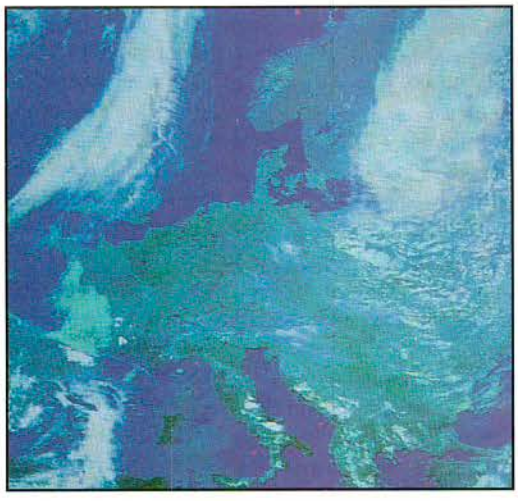
Weather satellites normally transmit two main types of image, visible light and infra red. While visible light images can be very interesting because

it is possible to detect and recognise geographical features - the snow covered Alps for example - such images have obvious limitations. They are no use at all at night, and low light levels during the northern hemisphere winter or extensive cloud cover produce unsatisfactory results. infra-red images are of a uniform standard at all times, with a range of grey scales representing different temperature levels. Thick rain-bearing cloud reaching to high levels in the atmosphere will be very cold at the highest levels. Land and sea temperatures will be very much higher. Infra-red generally gives a good representation of cloud distribution and thickness, and often enables sea and land areas to be distinguished.

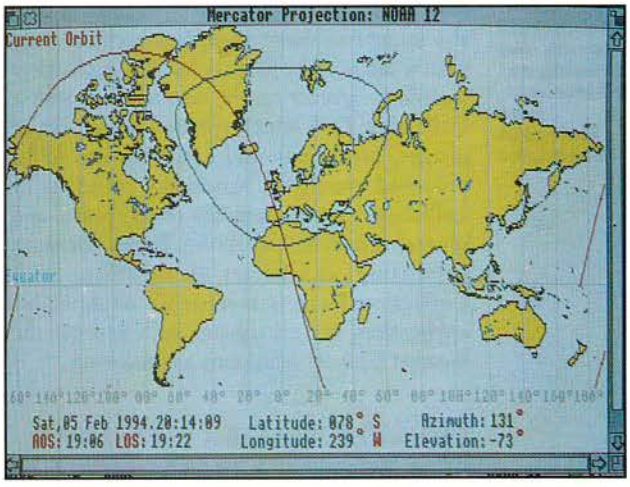


Meteosat whole earth: combined infra-red/ visible colour enhanced (left) and infra-red colour enhanced (right)

The Weather Desk has a number of features which enable much more to be achieved. All weather satellite images are transmitted in black and white, and shades of grey. The Weather Desk has image processing capabilities which enable the raw image to be manipulated in various ways. False colour can be applied, the greyscale image can be sharpened, enhanced for better contrast and so on, and received weather pictures can be superimposed upon coloured backdrops. To achieve the latter, the received grey scale has to be divided into two sections, one effectively representing sea and land which is masked out so that the underlying backdrop shows through, and the remainder representing the cloud itself.

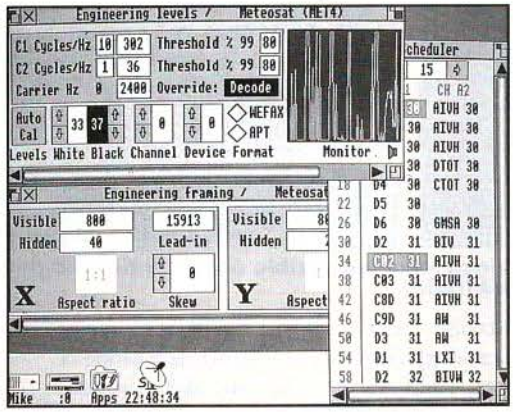


Secondly, the Weather Desk can be set up so that it captures a sequence of images over a period of time, which can then be played back to provide the animated display so beloved by the TV weather forecasters. You can even invoke interpolation between one image and the next so that the whole sequence evolves very smoothly indeed. This all places very heavy demands on your Archimedes, and you really need an ARM3 system with at least 4Mb of RAM to get close to the potential of this



NOAA orbit predictor (top) and NOAA combined infra-red/ visible images (bottom)

system. I also used CC's ColourCard Gold which boosts performance as well as improving colour (the Weather Desk supports 24-bit colour). I also used up 40Mb of hard disc space in no time at all.



Weather Desk: Engineering levels and framing set for Meteosat, plus Meteosat Scheduler

Now while this all sounds very exciting, it may also sound very daunting, so Spacetech has done what it can to make life easy for you. A complete recording sequence can be accomplished with a *Collection Task* which specifies which set of images, how many and how they are to be processed visually. A reasonably varied set of Collection Tasks is supplied ready to use, and several different Collection Tasks (memory permitting) can be set up together. Each Collection Task is a separate Archimedes application, but all register with and use the Weather Desk for scheduling and receiving.

USING THE WEATHER DESK - NOAA

Using Meteosat is a bit like recording TV programmes using a video recorder: you consult a schedule of what's on, programme your recorder for what you want, and leave it to get on with it. Satellites like the NOAA series scan and broadcast continuously as they move. Automatic control as with Meteosat is well nigh impossible. First of all you need to know when a satellite is going to pass close enough for its signal to be picked up. To this end Spacetech supply an application called *4a-col* which provides this information. Load details of the satellite of your choice (supplied by Spacetech in a file) and a Mercator projection of the world will be displayed showing the current orbit of the selected satellite and the area within which reception is possible. You can also print out schedules giving reference times for a sequence of dates.

With everything loaded and set up, the receiver set to the right frequency within the 137MHz waveband, you sit watching the predictive orbital display (which is updated in real time) listening to a small loudspeaker connected to the receiver. As the approaching satellite rises above the horizon, a faint 'pinging' can be detected amid the hiss and crackle. As the satellite gets closer the signal becomes stronger until only a clear persistent pinging can be heard. Click on the Decode button in the window to start reception and watch the picture build up on the screen. Eventually, as the satellite moves away, the hiss and noise start to return, spoiling the image once again. At that point stop the decoding and process and/or save the captured image as required.

I have, perforce, only scratched the surface of the many features of the Weather Desk. The software is very comprehensive and Spacetech has gone to reasonable lengths to ensure that the system, while clearly daunting in the level of technical detail which it must manage, nevertheless allows less experienced users to benefit from the alternative packaged approach. The manual contains a wealth of detailed information, but a simple tutorial introduction to receiving Meteosat and NOAA images using the Weather Desk would have helped considerably in the early stages.

I hope the illustrations accompanying this feature will convey some of the undoubted fascination which I found with this set-up. If you are tempted, please remember that Spacetech has produced a system designed to meet the needs of the professional as well as the amateur, and prices which range from £795 for a NOAA station through £1200 for a Meteosat station up to £1645 for a combined NOAA and Meteosat system reflect this approach. For myself, much as I would dearly love to continue exploring the capabilities of these systems, regretfully I must return to reliance on Michael Fish, John Kettley and other TV weather forecasters to do the job for me.

For more information on weather satellite receiving systems contact:

Spacetech,
21 West Wools, Portland,
Dorset DT5 2EA,
tel. 0305 822753,
fax 0305 860483.

LOOK systems Font Directory

A font filing system

Font Directory is the only font management application which contains a dedicated font filing system. All other programs work by simply swapping whole directories or moving font files from one folder into another.

Although writing and desiging a font filing system has taken more time and effort, it offers some additional benefits...

- **More flexibility** – Individual fonts (not just families or directories) can be installed and removed. You can also organise your fonts into categories, families and weights.
- **Saves space** – By using directories which only take up 2K, the space used by your font collection can be reduced.
- **Kind to discs** – Unlike some systems, font availability is controlled in memory and not by moving font files on the disc. This saves a lot of unnecessary disc access and speeds up the availability of your fonts.
- **No limits** – Well, not exactly... you can store over 5900 font families! And you can make many of these fonts available at any one time – typically over 700 font families.
- **Network friendly** – A special version of the software is available for network users. This allows each station to have a personal view of a central collection of fonts stored on a file server.
- **Star commands** – If required, star commands are provided to allow you to specify which fonts should be made available.
- **RISC OS compliant** – It works with both RISC OS 2 & 3 and is desktop compliant. As registered developers, the calls and messages provided are officially recognised by Acorn.
- **Well documented** – It comes with a 32-page printed manual which includes both a primer and a detailed description of the facilities provided.
- **Reviewed** – Here's what the reviewers say:

RISC User, Jan/Feb '94: *"This program provides the kind of facilities which should have been built into the operating system in the first place. It is very easy to use, and I find it utterly invaluable. Anyone who has more than a handful of fonts should buy it without delay. It is superbly presented, operates flawlessly, and has become a permanent addition to my iconbar."*

Archive, Sept '93: *"The real pièce de résistance is the facility to scan documents and files and install the fonts required automatically. This is a dream to use. I have always found it frustrating that Impression would simply replace all uninstalled fonts with Trinity without even giving the option to abort loading the document. Draw would replace unrecognised fonts with the system font. Now that is all a thing of the past.*

I was very happy with Font Directory. I found it very easy to install and use with minimal reference to the manual... this is a highly intuitive application – a great deal of care and thought must have gone into its design and realisation. It integrates seamlessly with RISC OS and if you use a lot of fonts, you have to have Font Directory."

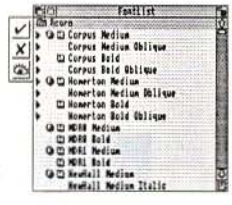
Hundreds of outline fonts are now available for the Archimedes and new fonts are being produced all the time. This is all very well, but it does mean that using and managing fonts is becoming increasingly difficult.

What is Font Directory?

Font Directory is a radical approach to storing and using outline fonts within the RISC OS desktop. At its heart is a dedicated font filing system which provides the user with an unparalleled level of control.

Easy-to-use

Using techniques pioneered by LOOKsystems, Font Directory allows you to install fonts at the click of a button without the having to restart your application.

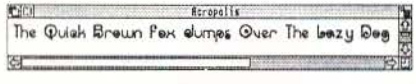


Just select the fonts in the FontList window and click on the 'tick' icon.

(If you wish, you can specify which fonts will be available on start-up and save favourite lists of fonts for later use.)

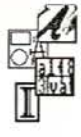
Font viewer

A preview window is available to help you decide which fonts you wish to install or just to remind you what a particular font looks like. If required, the text, size and colours used to display a font can be defined and even saved for later use.



Document scanning

The most powerful feature, however, has to be the ability to scan other applications' documents. When a document is dropped onto Font Directory, the fonts used will be made instantly available.



At last, no more 'font not found' errors!

FREE trial offer

Font Directory does a lot more than we can explain on a single page and so we are offering you the opportunity to try the software for free.

Just contact us at the address below and we will send you a complete pack. This can be returned within 10 days and you won't be charged a penny.

Otherwise, you can keep the software and we will invoice you for £35 inc VAT and UK P&P.

This offer only applies to UK residents.

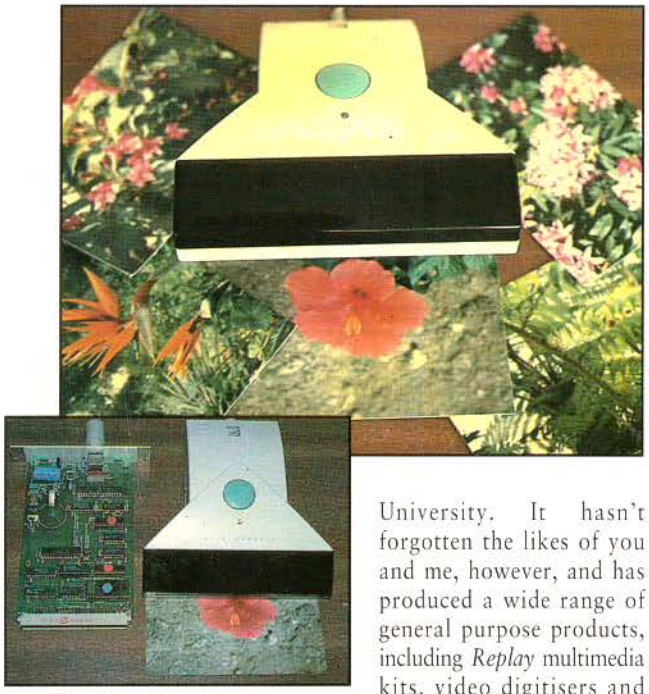
LOOKsystems, 47 Goodhale Road, Bowthorpe, Norwich, NR5 9AY.
Telephone: (0603) 748253. Facsimile: (0603) 764011.

A hard disc is recommended and you will need enough space to store all of your fonts. Most major applications and file formats are supported.

The Irlam Imagell Colour Scanner

Alan Bonsor examines the first affordable 24-bit colour scanner for the Arc.

Irlam Instruments has gained a reputation over the past few years for developing innovative scientific instruments for the Archimedes, with its products being used by companies and institutions such as Thorn EMI, Kodak, the Medical Research Council and Oxford University. It hasn't forgotten the likes of you and me, however, and has produced a wide range of general purpose products, including *Replay* multimedia kits, video digitisers and sound samplers. Irlam has also led the way in bringing high quality flat-bed colour scanners to the Arc, greatly increasing the Arc's appeal as a professional desktop publishing system. These scanners are very expensive though, and will leave a gaping hole in the average user's bank account. Until recently, the only alternative available to users wanting high quality scanning facilities, but unable to afford an A4 system, has been the Sharp JX-100 24-bit mini flat-bed scanner. Also sold by RISC Developments as the Spectra, the JX-100 has proved a popular choice for many users, but at around £550, it's still a little pricey.



The Irlam hardware is based on the stylish Logitech ScanMan

Low-cost colour hand scanners have been available for the PC and Macintosh for quite a while now, but as with the two CD-ROM systems reviewed in RISC User 7:3, it's required someone to design and manufacture an interface card to allow them to be used on the Archimedes. Irlam has now developed an expansion card for the Arc that will drive a wide range of colour hand scanners, the first of which is the Logitech *ScanMan Colour*.

THE PACKAGE

The package sent to me for review comprised of the scanner itself, a single-width expansion card, a disc containing Irlam's *ProI-Mage* colour scanning software and Acorn's *ChangeFSI*, and a 54 page manual and installation instructions. The single-width card is currently the only version available, although Irlam is designing a mini-podule for A3010, A3020 and A4000 computers. A slightly modified version of the single-width card is available for A3000 users, as a separate mains adaptor is needed to provide power to the card and scanner.

The *ScanMan* is one of the most stylish scanners I have come across. If it took part in a scanner beauty contest, it would probably win full marks for its looks. Its specifications are very good as well, and almost identical to the JX-100's. It has a 24-bit scan head capable of scanning a 4" by 6" image in 16 million colours at up to 400 dots per inch (dpi).

Colour scanning is very memory intensive however, so before you rush out and buy this scanner, ensure that your computer is powerful enough to handle it. The *ScanMan* software allows you to scan and save images in a variety of formats, including 8-bit Sprite files and 24-bit TIFF, JPEG, Clear and PBM files. You'll be able to fit a couple of Sprite files onto an 800K disc, but a hard drive with several Mb of free space is essential for saving 24-bit images. A 4" by 6" 24-bit scan at 400 dpi needs about 16Mb! And although the manual states that a minimum of 2Mb of RAM is required, if you want to use the scanner to its full capacity, you'll need at least 4Mb of RAM. An ARM3 processor is not necessary, but will reduce processing time considerably. You will also need RISC OS 3.1 or greater.

Installation simply involves plugging in the expansion card, connecting the scanner to it, and running the *ProI-Mage* colour scanning software.

THE SCANNER IN USE

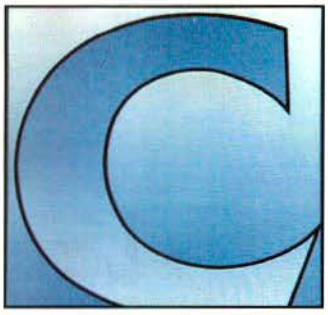
In the review of Computer Concepts' and Wild Vision's *GreyHawk* video digitiser in RISC User 6:10, I made the comment that, until then, Wild Vision's excellent hardware products had almost invariably been let down by unexciting and limited supporting software. Unfortunately, Irlam's *ProI-Mage* falls into the same trap. Firstly, it provides very few image and colour processing facilities, and although this is compensated for by the inclusion of *ChangeFSI* in the package, it would be far better if *ProI-Mage* provided a similar range of functions to Computer Concepts' *Scanlight Plus* software. Secondly, its control panel is cluttered and untidy, and this makes the program very user-unfriendly. Lastly, the software contains quite a few minor but irritating bugs of which Irlam is now aware.

Starting a scan is a very simple process. In the control panel you specify the width and height of the photograph being scanned and the scan type - colour, monochrome, or 4, 16 or 256 grey levels. A slider switch on the scanner allows you to change the scan resolution to 100, 200, 300 or 400 dpi, and a dial on the scanner's rear alters the brightness of the scan. Once you've set up the software, you click on the Scan button in the control panel, position the scanner over the photograph, and press the turquoise button on top of the scanner. As you pull the scanner over the photo, the Scan button in the control panel indicates the percentage of the scan completed, and you can either continue scanning until it has reached 100% or stop the scan prematurely by pressing Space. Pressing the turquoise button on the scanner a second time will pause the scanner, enabling you to reposition it on a different part of the photo before continuing with the scan.

Unlike the JX-100 and other flat-bed scanners, the image in the viewer window is not built-up 'on the fly', but only once the scan has been completed. The control panel allows you to specify whether the scanned image should be dithered, lightened or darkened with gamma correction, sharpened or have its darkest and lightest colours removed. These options must be set before the scan is started, as they are applied to the image while it is being built-up in the viewer window. The scanned image can then be saved for editing in one of the Archimedes image processors, or exporting to the PC or Macintosh.

THE VERDICT

The *ScanMan* is a very powerful scanner. It's well designed, easy to use, and, with a bit of patience and trial and error with the *ProI-Mage* software, produces high quality results.



ProI-Mage deals well with colour scales

ProI-Mage in action

Irlam has obviously put a lot of effort into getting the best possible image from the scanner into the computer, and the images that *ProI-Mage* generates are excellent. With several very competent image processors available for the Archimedes, all of which were evaluated in the *Group Survey* in RISC User 7:2, and *ProI-Mage's* ability to save a scanned image in industry standard 24-bit file formats, the fact that *ProI-Mage* is not a particularly powerful or easy-to-use piece of software should not deter you from purchasing the system. Considering that it is £190 cheaper than its nearest rival, the JX-100, the *ImageII* is an excellent product at a very reasonable price.

PRODUCT INFO

Product	*ImageII Colour Hand Scanner*
Supplier	*Irlam Instruments Ltd* *Brunel Institute for Bioengineering,* *Brunel University,* *Uxbridge,* *Middlesex UB8 3PH.* *Tel. (0895) 811401*
Price	*£359.00 ex. VAT*

New Modes for Future Machines

by Lee Calcraft

Last month we took a look at the new sprite format being introduced by Acorn. This will cope with images containing up to 16 million colours, and has further in-built expansion capacity.

In a parallel development, Acorn have begun to formulate a totally new approach to screen modes. Instead of specifying each mode by a single number, modes will be determined by specifying their characteristics - such as the number of colours on screen, the screen size and resolution. There will be two new ways of specifying a mode: you can use a *mode string* or a *mode selector*. Additionally old fashioned mode numbers will still be usable to provide backward compatibility.

THE MODE STRING

A mode string is simply a textual string containing information about a required mode, in a format that can be understood by such commands as:

```
MODE (from Basic) or
*WimpMode
```

The syntax for the string is as follows:

```
Xnnnn  X resolution (nnnn 3-4 digits)
Ynnnn Y resolution (nnnn 3-4 digits)
Cccc   Colours (ccc=2,16,256,32K,16M)
Gccc   Greys    (ccc=16,256)
EXn    X eigenfactor (0-3)
EYn    Y eigenfactor (0-3)
Ffff   Frame rate (fff 2-3 digits)
```

NB The eigenfactor is the number of bits by which a dimension in OS units must be shifted to the right to return the equivalent in pixels.

A mode string does not need to contain all of this data. For example:

```
X640,Y512,C16
```

will create the equivalent of mode 20. To change mode to the equivalent of mode 28 you could issue the following from Basic:

```
MODE X640,Y480,C256
```

MODE SELECTOR

Alternatively, Basic's MODE command (but not *WimpMode) can be passed a so-called *mode selector*. This is a pointer to a word-aligned block of memory which can hold data describing a particular mode. This flexible device can also be used to pass mode information to and from a number of important SWIs, which are being extended accordingly. For example:

```
OS_ReadModeVariable
OS_CheckModeValid
OS_Byte 135 (read mode)
```

Additionally, all ColourTrans SWIs accepting a mode number will in future understand a mode selector, as will the new SWI *OS_ReadMode*, which will be capable of both reading and setting screen modes. The structure of a mode selector block is given in Table 1.

Offset	Value
0	Mode selector flags
	bit 0 = 1
	bits 1-7 = 0 (format specifier)
	bits 8-31 = 0 (reserved)
4	x-resolution (pixels)
8	y-resolution (pixels)
12	pixel depth
	0 = 1 bpp
	1 = 2 bpp
	2 = 4 bpp
	3 = 8 bpp
	4 = 16 bpp
	5 = 32 bpp
16	frame rate (Hz) (-1 : use first match)
20	optional pairs of words
	mode variable index, value
	mode variable index, value
	...etc
	-1 terminator

Table 1.
The structure of a mode selector block.

WILL YOUR SOFTWARE CRASH IN THE NEW MODES?

The answer to this question depends on what your software does, and how it does it. The new sprite and mode handling operations have been written as invisibly as possible in an attempt to provide a large degree of backward compatibility.

Obtaining mode information is obviously an awkward issue, but it is unlikely to affect any software which does not display graphical images, but could obviously cause trouble in a painting package or whatever. On future machines, any call to the operating system made by your

software to find out what mode you are in will result in a mode selector being passed back instead of a mode number. If your software keeps this in some variable - say *curr_mode*, this will cause no immediate problems - it's just that instead of the number 15, say, it will have a much larger value - the address of the mode selector block.

Unfortunately the mode selector block will not remain valid forever, even if no changes are made to the screen mode. In other words, our variable *curr_mode* can only be relied upon as pointing to a valid mode selector block for a relatively short time - the moment any other Wimp task requests a mode selector, the previous one will become invalid. Thus if your software passes this variable in an operating system call, for example to obtain data about the mode you are in, it will work only for as long as the mode selector data held in that block remains valid - whereas of course if the variable held an old fashioned mode number, the call could be made at any time.

The way around this is to alter your software so that it checks the number it gets back when requesting a mode number, and if the number is outside the range 0-255, it should make a permanent copy of the mode selector block. Then any time that you need to supply a mode number, simply supply a pointer to this permanent block. Obviously you will need to update the block when there is a mode change.

Fortunately the problem should not arise too often, because if you want to use OS calls such as *OS_ReadModeVariable* you can specify the current mode by simply passing -1 to R0; and if your software does this, it will work just as happily on future machines as it does at present (well, that's the theory anyway).

GREY SCALE MODES

Future Acorn platforms are expected to offer both 16 and 256 level grey scale modes. These will be obtained through the use of special palettes in the 16 and 256 colour modes. As a consequence, it will not be possible to entirely specify such modes by supplying a mode selector, since this structure is unable to specify the palette. The solution will be to use an appropriate mode string passed to the *WimpMode* command, described above. For example, the following system call:

```
*WimpMode X640,Y480,G256
```

would create the equivalent of Mode 28, but in 256 grey scales. This and similar modes are excellent for the representation of black and white photographic images, and represent a significant improvement on the 8 and 16 grey scales currently available.

NEW MODES, MONITORS AND SCREEN RAM

As we suggested in the article *Video Nouveau* (Risc User 7:1), the use of the VIDC20 in future machines will mean a much more flexible approach to screen mode creation, and this is reflected in the new mechanisms which Acorn are putting in place for selecting and defining screen modes in future versions of the operating system. On future machines it should be possible to select screen modes with resolutions of 1600 x 600 pixels or more, and this will permit Desktops as big as 3200 x 2400 OS units. If you compare this to the size of a standard mode 12 Desktop (1280 x 1024 OS units), you will see the massive gain - the new Desktop would be some six times the area of its mode 12 counterpart.

Of course you will need a very high resolution monitor to display such modes, though you should not need to buy a new monitor to reap the benefits of the increased number of colours on future machines. A monitor which can display 256 colours in mode 28 should be able to display 16 million colours in a mode of equivalent resolution.

However, the demands on RAM and on disc space for image storage will increase to a serious degree. A 32,000 colour mode will take up twice the RAM of a 256 colour mode of the same pixel resolution. And if you go to a 16 million colour mode, you will again double the amount of RAM. In practice it is very hard to tell the difference between a picture with 16 million colours, and one with a 'mere' 32,000, and it is likely that the latter modes may be preferred because of their relative economy of memory. Having said that, a small calculation reveals that the giant Desktop mode mentioned above with a pixel resolution of 1600 x 600 in 32,000 colours will use a massive 1875K or RAM, and a screen-sized sprite from this mode would take up a similar amount of disc space, unless it were compressed in some way.

Without any doubt, these all appear to be exciting and worthy developments, though perhaps now is the time to begin saving up for a new monitor! More on the future of Acorn operating systems next month.

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Shrink - A Window Organiser

Alan Bonsor and Nathan Micholey present an invaluable utility for your RISC OS 3 Desktop.

RISC OS 3 allows you to iconise a window onto the *Pinboard* by holding down Shift and clicking on the window's *Close* icon. This will replace the window with an icon on the backdrop. You can then re-open the original window by simply double-clicking on this icon. Iconised windows do have a couple of shortcomings, however. Firstly, it is very easy to lose an icon on the backdrop behind several layers of windows. Secondly, it is not always possible to identify to which application an icon belongs, and lastly, not all sticky backdrop applications support iconised icons.

The *Shrink* application listed here provides an excellent alternative to using *Pinboard's* iconising system. Instead of placing an icon on the backdrop when a window is closed, pressing a hotkey while the mouse pointer is over the window's title bar will cause the window to shrink so that just its title bar is displayed - all the window's objects, such as scroll bars, close and resize icons and panes, will be removed. This has the advantage over iconised icons in that the window title can always be seen, and as the program doesn't use *Pinboard's* iconising routines, it can be used with any sticky backdrop application, regardless of whether or not it supports iconising. *Shrink* does not replace the RISC OS iconising system though, so you can still use the *Shift-Close window* combination to iconise a window. *Shrink* will not allow you to shrink menus or dialogue boxes such as *Save* and *Info* windows, and will beep and close the menu if you attempt to do so.

CREATING THE APPLICATION

First of all, create an application directory called *!Shrink*, and save inside it a sprite file called *!Sprites* which contains a 34x17 pixel mode 12 sprite called *!shrink*. Next, use a text editor such as *Edit* or *DeskEdit* to create an *Obey* file containing the following lines:

```
IconSprites <Obey$Dir>.!Sprites
WimpSlot -min 32k -max 32k
If "<Shrink$Dir>"<>"" Then Error
Shrink is already running
Set Shrink$Dir <Obey$Dir>
Run <Shrink$Dir>.!RunImage
```

This should be saved as *!Run* inside the *!Shrink* directory. Finally, type in Listing 1 and save it as *!RunImage* in the same directory.

USING Shrink

Double-clicking on *Shrink* in a Filer window will install it on the icon bar. The default hotkeys used by *Shrink* are *Ctrl-Tab* and *Ctrl-Shift-Tab*, although these can easily be modified to suit your own requirements. To see *Shrink* in action, ensure that no window has the input focus (this can easily be achieved by opening an *Edit* window and then closing it), move the pointer over any window's title bar, and press *Ctrl-Tab*. The window will immediately be shrunk to just its title bar. To unshrink the window, simply press *Ctrl-Tab* over the title bar again. In order to shrink all the windows on the Desktop, press *Ctrl-Shift-Tab*. The title bars will then be arranged down the left-hand side of the Desktop. You can unshrink individual windows by moving over the required window's title bar and pressing *Ctrl-Tab*. It is only possible to unshrink all windows simultaneously by quitting the *Shrink* application.

Clicking Menu over the *Shrink* icon on the icon bar will open a menu containing an option called *Lose icon*, in addition to the usual *Info* and *Quit*. Selecting the *Lose icon* option will remove the *Shrink* icon from the icon bar without quitting the program. The purpose of this is to give you more space on your icon bar. Once you have selected this option, you will only be able to quit *Shrink* from the *Task Manager* window.

Shrink supports the RISC OS 3 *Desktop boot* facility. If you save the *!Boot* file from the *Task Manager* menu, and then load the file into a text editor, you will see that the file contains lines similar to the following:

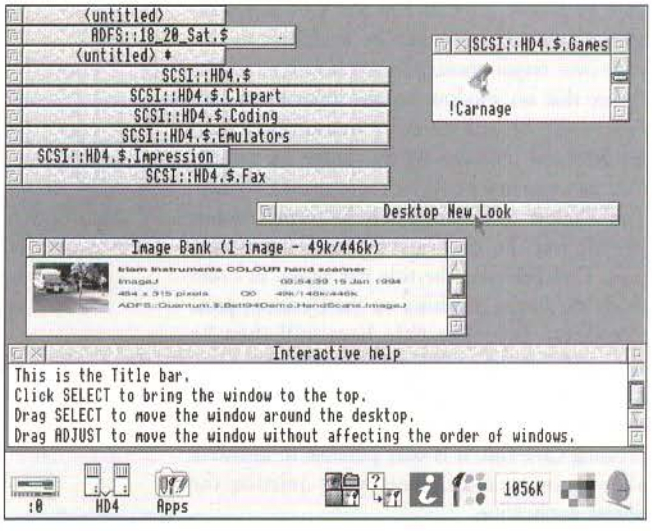
```
Set Shrink$Options HotKey1=&1AA
HotKey2=&1BA
Filer_Run ADFS::4.$.!Shrink
```

The first line sets the hotkeys which *Shrink* will recognise. *HotKey1* shrinks/unshrinks individual windows whilst *HotKey2* shrinks all windows. These codes are documented on page 1198 of the

RISC OS 2 Programmer's Reference Manual, and page 3-123 of the RISC OS 3 PRMs. If you do not have access to the PRMs, you can still calculate certain hotkey codes yourself. Press F12 and type **Basic* to enter Basic. Then just enter the following line:

```
A=GET:PRINT ~A <Return>
```

and press the hotkey combination that you want to use, e.g. *Ctrl-Q* or *Ctrl-W*. You can then use the values returned in the *Shrink$Options* line. Unfortunately, this method will only work for the ASCII and numeric keys on the keyboard - for the function keys, etc., you will need to refer to the PRMs. If you already have a *!Boot* file, you can add the *Set Shrink$Options* and *Filer_Run* lines to it to run *Shrink* automatically. Clicking on the *Lose icon* option in the *Shrink* menu before saving a *!Boot* file will result in an extra item, *NoIcon*, appearing in the *Shrink$Options* line. Removing *NoIcon* from this line will cause the *Shrink* icon to reappear on the icon bar when the application is next run.



Using Shrink to reduce windows to title bars only

ABOUT THE PROGRAM

The first part of the program, up to line 490, consists of the normal Wimp initialise and poll loop and is not described further here. Writing Wimp applications is covered in considerable detail in the *Mastering the Wimp* series (RISC User 2:9 to 4:6), and in the book *Wimp Programming for All.*

Shrink works by grabbing unclaimed keypresses via reason code 8 (line 330), checking whether one of the two hotkeys has been pressed, and then calling either *PROCshrink* or *PROCshrink_all*. *PROCshrink* (line 920) closes any menus that are open and then checks whether the mouse pointer is over a title bar (line 960). If not, it beeps and returns to the poll loop, otherwise it calls *PROCshrink_handle* (line 1280).

PROCshrink_all (line 1000) firstly calculates the top-left co-ordinates of the screen. It then repeatedly calls *SYS "Wimp_GetWindowInfo"* (line 1090) to obtain the handle of every open window, checks whether the window can be shrunk, and calls *PROCshrink_handle* for each window.

PROCshrink_handle is the heart of the *Shrink* application. It uses an array, *windata%*, to store the handle of every window it has shrunk, and checks, between lines 1300 and 1380, if the window handle passed to it is in the array. If it is, *PROCunshrink*, line 1700, is called to restore the window to its original state. *PROCshrink_handle* then proceeds to create an entirely new window, either at the position of the original window if it was called by *PROCshrink*, or down the left-hand side of the screen if it was called by *PROCshrink_all* (lines 1400 to 1680). This new window has an identical title bar to the original window, but has no close icon, resize icon, scroll bars or panes. You will notice that every title bar created has a very small work area beneath it. This is because RISC OS does not allow you to create a window with no work area at all.

When the *Shrink* application is quit, either from the icon bar icon or from the Task Manager, all shrunk windows will be restored to their original states. This is performed by *PROCend* (line 2420).

```
 10 REM >!RunImage
 20 REM Program   Shrink
 30 REM Version   A1.10
 40 REM Author    Alan Bonsor
                  Nathan Micholey
 50 REM RISC User April 1994
 60 REM Program   Copyright RISC User
 70 REM           NOT Public Domain
 80 :
 90 ON ERROR PROCerror(FALSE)
100 wlimit%=200
110 DIM q &200,ind% &100,error% &200
120 DIM me% &80,tbar% &100,tdata% &100
```

```
  130 DIM wdata%(3,wlimit%)
  140 PROCgetc:PROCread_config:tbar%+=4
  150 tbarhand%=0:s_hand%=1:thistask%=2
  160 title%=3:my%=0:wdata%()=0
  170 SYS "Wimp_Initialise",200,&4B53415
4,"Shrink" TO ,our_task%
  180 d%=q+4:PROCcreate_info(d%)
  190 SYS "Wimp_CreateWindow",,d% TO iw%
  200 PROCcreate_tbar(tbar%)
  210 e%=-800000:d%!0=e%:d%!4=e%+100
  220 d%!8=e%:d%!12=e%+100:d%!24=-2
  230 d%!28=d%!28 OR &1040:d%!84=0
  240 SYS "Wimp_CreateWindow",,d% TO !q
  250 SYS "Wimp_OpenWindow",,q
  260 PROCmenu:IF m_ic% m_ic%=FNiconbar
  270 ON ERROR PROCerror(TRUE)
  280 REPEAT
  290 SYS "Wimp_Poll",1,q TO event%
  300 CASE event% OF
  310 WHEN 2:SYS "Wimp_OpenWindow",,q
  320 WHEN 6:IF q!12=-2 AND q!8=2 SYS "W
imp_CreateMenu",,me%,!q-64,216
  330 WHEN 8 :
  340 CASE q!24 OF
  350 WHEN key1% : PROCshrink
  360 WHEN key2% : PROCshrink_all
  370 OTHERWISE  :
  380 SYS "Wimp_ProcessKey",q!24
  390 ENDCASE
  400 WHEN 9:PROCmenu_select(q)
  410 WHEN 17,18 :
  420 CASE q!16 OF
  430 WHEN 0:PROCend
  440 WHEN 10:PROCdesktop_save
  450 WHEN &400C3:PROCtask_quit(q!4)
  460 WHEN &400CB:PROCwin_closed(q!20)
  470 ENDCASE
  480 ENDCASE
  490 UNTIL FALSE
  500 :
  510 DEF PROCdesktop_save
  520 o$="":IF m_ic%=FALSE o$="NoIcon "
  530 o$="Set Shrink$Options "+o$+"HotKe
y1=&"+STR$~key1%+" HotKey2=&"+STR$~key2%
  540 BPUT#(q!20),o$:BPUT#(q!20),prg$
  550 ENDPROC
  560 :
  570 DEF PROCmenu_select(q)
  580 IF !q=1 !q=-2:q!4=m_ic%:SYS "Wimp_
DeleteIcon",,q:m_ic%=0
  590 IF !q=2 PROCend
  600 ENDPROC
  610 :
  620 DEF FNiconbar
  630 LOCAL i%
  640 q!0=-1:q!4=0:q!8=0:q!12=68:q!16=96
  650 q!20=&2002:$(q+24)="!Shrink"
  660 SYS "Wimp_CreateIcon",,q TO i%
  670 =i%
  680 :
  690 DEF PROCmenu
  700 $me%="Shrink":me%!12=&70207
  710 me%!16=&98:me%!20=40:me%!24=0
  720 PROCm_entry(me%,1,iw%,"Info")
  730 PROCm_entry(me%,2,0,"Lose icon")
  740 PROCm_entry(me%,-3,0,"Quit")
  750 ENDPROC
  760 :
  770 DEF PROCm_entry(me%,n%,sub%,text$)
  780 me%+=ABS(n%)*24+4
  790 IF SGN(n%)=-1 n%=128 ELSE n%=0
  800 me%!0=n%:me%!4=sub%:me%!8=&7000011
  810 $(me%+12)=text$
  820 ENDPROC
  830 :
  840 DEF PROCerror(cont%)
  850 LOCAL f:SYS "XWimp_CreateMenu",,-1
  860 !error%=ERR
  870 $(error%+4)=REPORT$+": Internal er
ror code ("+STR$(ERL DIV 10)+")"+CHR$0
  880 SYS "Wimp_ReportError",error%,3,"S
hrink"TO,f
  890 IF f=2 OR NOT cont% PROCend
  900 ENDPROC
  910 :
  920 DEF PROCshrink
  930 LOCAL err%,i%,ind%
  940 SYS "XWimp_CreateMenu",,-1
  950 SYS "Wimp_GetPointerInfo",,q
  960 IF q!16 <> -4 VDU7:ENDPROC
  970 PROCshrink_handle(q!12,TRUE)
  980 ENDPROC
  990 :
 1000 DEF PROCshrink_all
 1010 LOCAL h%,f%,i%,j%,h2%
 1020 SYS "XWimp_CreateMenu",,-1
 1030 h%=-2
 1040 SYS &35,-1,12 TO ,,my%
 1050 SYS &35,-1,5 TO ,,i%
 1060 top%=my%<<i%:my%=top%:mx%=0
 1070 REPEAT
 1080 !q=h%
 1090 SYS "Wimp_GetWindowInfo",,q OR 1
 1100 h2%=d%!24:f%=d%!28
 1110 IF NOT (f% AND (1<<11)) THEN
 1120 IF d%!8>=0 AND d%!12>=0 THEN
 1130 IF f% AND (1<<31) THEN
 1140 IF f% AND (1<<25) PROCshrink_handl
```

```
e(h%,FALSE)
 1150 ELSE
 1160 IF f% AND 1 PROCshrink_handle(h%,F
ALSE)
 1170 ENDIF
 1180 ENDIF
 1190 ENDIF
 1200 h%=h2%
 1210 UNTIL h%=-1
 1220 ENDPROC
 1230 :
 1240 DEF FNsh_err(a%,b%)
 1250 IF a% AND b% VDU7
 1260 =b%
 1270 :
 1280 DEF PROCshrink_handle(hand%,uns%)
 1290 LOCAL err%,i%
 1300 FOR i%=0 TO wlimit%
 1310 IF wdata%(tbarhand%,i%)=hand% THEN
 1320 IF uns% PROCunshrink(i%)
 1330 ENDPROC
 1340 ENDIF
 1350 IF wdata%(s_hand%,i%)=hand% THEN
 1360 PROCunshrink(i%)
 1370 ENDIF
 1380 NEXT
 1390 err%=0
 1400 FOR i%=0 TO wlimit%
 1410 IF wdata%(tbarhand%,i%)=0 err%=1:i
nd%=i%:i%=wlimit%
 1420 NEXT
 1430 IF FNsh_err(uns%,err%=0) ENDPROC
 1440 wdata%(s_hand%,ind%)=hand%
 1450 !q=wdata%(s_hand%,ind%)
 1460 SYS "XWimp_GetWindowInfo",,q OR 1
TO ; err%
 1470 IF FNsh_err(uns%,err%AND1) ENDPROC
 1480 wdata%(thistask%,ind%)=FNget_windo
w_task(wdata%(s_hand%,ind%))
 1490 $tdata%=FNget_window_name(d%,wdata
%(thistask%,ind%))
 1500 SYS "XOS_Module",6,,,LEN($tdata%)+
1 TO ,,wdata%(title%,ind%) ;err%
 1510 IF FNsh_err(uns%,err%AND1) ENDPROC
 1520 $wdata%(title%,ind%)=$tdata%
 1530 IF uns% THEN
 1540 tbar%!0=d%!0:tbar%!4=d%!12
 1550 tbar%!8=d%!8:tbar%!12=d%!12
 1560 ELSE
 1570 my%-=40
 1580 IF my%<132 my%=top%-40:mx%+=80
 1590 tbar%!0=mx%:tbar%!4=my%
 1600 tbar%!8=mx%+d%!8-d%!0:tbar%!12=my%
 1610 ENDIF
 1620 tbar%!24=d%!24
 1630 tbar%!72=wdata%(title%,ind%)
 1640 SYS "Wimp_CreateWindow",,tbar% TO
wdata%(tbarhand%,ind%)
 1650 !(tbar%-4)=wdata%(tbarhand%,ind%)
 1660 SYS "Wimp_OpenWindow",,tbar%-4:d%!
24=-3
 1670 SYS "Wimp_SendMessage",2,q,wdata%(
s_hand%,ind%)
 1680 ENDPROC
 1690 :
 1700 DEF PROCunshrink(i%)
 1710 LOCAL sx%,sy%,h%
 1720 h%=wdata%(s_hand%,i%)
 1730 !q=h%:SYS "Wimp_GetWindowState",,q
 1740 ht%=d%!12-d%!4:sx%=d%!16:sy%=d%!20
 1750 !q=wdata%(tbarhand%,i%)
 1760 SYS "Wimp_GetWindowState",,q
 1770 d%!4=d%!12-ht%:d%!16=sx%:d%!20=sy%
 1780 !q=h%
 1790 SYS "Wimp_SendMessage",2,q,h%
 1800 PROCremove_tbar(i%)
 1810 ENDPROC
 1820 :
 1830 DEF FNget_window_task(w%)
 1840 error%!12=0:SYS "Wimp_SendMessage"
,19,error%,w% TO ,,w%
 1850 =w%
 1860 :
 1870 DEF FNget_window_name(d%,t%)
 1880 LOCAL l%,a$
 1890 IF d%!56 AND (1<<8) THEN
 1900 SYS "Wimp_TransferBlock",t%,d%!72,
our_task%,error%,256:d%=error%:l%=254
 1910 ELSE
 1920 d%+=72:l%=12
 1930 ENDIF
 1940 WHILE ?d%>=ASC(" ") AND l%>=0
 1950 a$+=CHR$(?d%):d%+=1:l%-=1
 1960 ENDWHILE
 1970 =a$
 1980 :
 1990 DEF PROCwin_closed(wind%)
 2000 LOCAL i%
 2010 FOR i%=0 TO wlimit%
 2020 IF wind%=wdata%(s_hand%,i%) PROCre
move_tbar(i%):ENDPROC
 2030 NEXT
 2040 ENDPROC
 2050 :
 2060 DEF PROCtask_quit(t%)
 2070 LOCAL i%
 2080 FOR i%=0 TO wlimit%
 2090 IF t%=wdata%(thistask%,i%) PROCrem
```

```
ove_tbar(i%)
 2100 NEXT
 2110 ENDPROC
 2120 :
 2130 DEF PROCremove_tbar(i%)
 2140 !q=wdata%(tbarhand%,i%)
 2150 SYS "Wimp_DeleteWindow",,q
 2160 SYS &18,7,,wdata%(title%,i%)
 2170 wdata%(tbarhand%,i%)=0
 2180 wdata%(s_hand%,i%)=0
 2190 wdata%(thistask%,i%)=0
 2200 wdata%(title%,i%)=0
 2210 ENDPROC
 2220 :
 2230 DEF PROCread_config
 2240 LOCAL a$,a%
 2250 m_ic%=TRUE:key1%=&1AA:key2%=&1BA
 2260 SYS "XOS_GSTrans","<Shrink$Options
>",q,&100 TO ,a$
 2270 IF INSTR(a$,"NoIcon") m_ic%=FALSE
 2280 PROCread_key(1,key1%)
 2290 PROCread_key(2,key2%)
 2300 ENDPROC
 2310 :
 2320 DEF PROCread_key(n%,RETURN key%)
 2330 LOCALa%
 2340 a%=INSTR(a$,"HotKey"+STR$n%+"=")
 2350 IF a% key%=EVAL(MID$(a$,a%+8))
 2360 ENDPROC
 2370 :
 2380 DEF PROCgetc
 2390 SYS "XOS_GSTrans","<Obey$Dir>",q,&
100 TO ,prg$:prg$="Filer_Run "+prg$
 2400 ENDPROC
 2410 :
 2420 DEF PROCend
 2430 ON ERROR OFF
 2440 FOR i%=0 TO wlimit%
 2450 IF wdata%(s_hand%,i%)<>0 PROCunshr
ink(i%)
 2460 NEXT
 2470 *Unset Shrink$Dir
 2480 END
 2490 :
 2500 DEF PROCcreate_info(q)
 2510 LOCAL i,v
 2520 q!0=&FC:q!4=&1D0:q!8=&378:q!12=772
 2530 q!16=0:q!20=4:q!24=-1:q!28=&840000
12:q!32=&1070207
 2540 q!36=&C0E0C:q!40=0:q!44=&FFFFFC00:
q!48=&500
 2550 q!52=4:q!56=&13D:q!60=0:q!64=1:q!6
8=0:DIM i 19:q!76=-1:q!72=i:q!80=&13
 2560 $i="About this program":q!84=&A:q!
88=&2A4:q!92=-204:q!96=&354:q!100=-156
 2570 q!104=&B700003D:q!108=&740D4B0D
 2580 q!112=&656C7469:q!116=&FE0D3E64:q!
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 Micholey"
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 2780 q!392=&1B00013D:DIM i 27,v 3
 2790 $v="R2":q!400=v:q!396=i:q!404=&1B
 2800 ?i=169:$(i+1)=" Copyright RISC Use
r 1994"
 2810 ENDPROC
 2820 :
 2830 DEF PROCcreate_tbar(q)
 2840 LOCAL i,v
 2850 q!0=&28A:q!4=&2EA:q!8=&3C8:q!12=&2
EE:q!16=0
 2860 q!20=0:q!24=-1:q!28=&85000012:q!32
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 2900 $i="<Untitled>":q!84=0
 2910 ENDPROC
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PrimeSolver

Mark Sealey reviews a highly original package from Minerva.

Every so often an educational product comes along which is so original and has been so well executed that it is easy to be wholly enthusiastic about it.

INTRODUCTION

PrimeSolver is a single disc pack with software designed to enable pupils working in key stages 2 to 4 (and beyond) to simulate mechanical puzzles using a bank of mostly everyday objects (cogs, wheels, seesaws, buckets and rope etc.) These are represented as icons, and positioned in relation to one another using standard drag and drop techniques with the mouse. The 'scene' is then realistically animated to see what happens.

These component objects, or 'gadgets' in PrimeSolver parlance, all properly obey the relevant laws of physics. They cannot be placed over one another, for instance. Those which can do so move, fall, bounce or snap quite credibly. Those which affect others (by sucking, knocking, blowing and pushing) do so realistically in PrimeSolver's smooth animations.

In essence, a microworld is created which actively exploits the visually immediate environment of the Wimp to encourage experimentation. You are in charge of the ways in which the puzzles are set up, changed and solved. PrimeSolver, in fact, is the mechanical, object-oriented equivalent of a text processor using pictures - see figure 1.

CONTEXT

It is true that PrimeSolver is another in Minerva's excellent 'Prime' series (watch out for *PrimeMover* soon; PrimeWord was reviewed in RISC User 6:7). But it is just as true that this package scores highly in its own right by possessing these prized attributes of good educational software:

open-endedness - it can encourage a variety of learning outcomes which relate as much to the pupil as to the material; it is the process of manipulating the microworld that counts

adaptability - it can be used comfortably with a variety of teaching styles and easily adapted to many learning environments

indispensability - some of the activities simulated on the computer would be impossible and/or dangerous if carried out in real life!

USING THE SOFTWARE

The last point (above) is demonstrated immediately by looking at the gadgets at your disposal in the pane at the right of the single window in which PrimeSolver operates - electric fans, heavy objects dropping (and bouncing realistically) from great heights, bombs, lit candles, live birds, shears, over 50 in all.

All of them, too, are familiar in Blue Peter fashion to the kids using them - from jam jars to lasers, eggs to vacuum cleaners plus the contents of what should be found under a well-stocked bench in many technology lessons. True, not ALL of them are dangerous; some are strange (rugby posts, a nest and a fly?), but all of them are guaranteed to be fun to the pupils who are let loose on them.

Let loose? Well, not quite. Admittedly it is possible to allow non-directed experiment with the gadgets, just to see what they will do and how each will interact with the others; indeed, this is a valid and useful stage through which many kids (and adults) will need to pass.

But some of the more purposeful work will come from solving a particular task with whichever gadgets have been placed at your disposal. Of course, superfluous gadgets can be left for the unwary to try and use quite spuriously. After all, this is the real world! A menu is used both to choose the puzzle task and be reminded of what is required to solve it.

THREE MODES

PrimeSolver uses the same screen layout, the same methods of manipulating gadgets, and indeed the same working environment throughout.

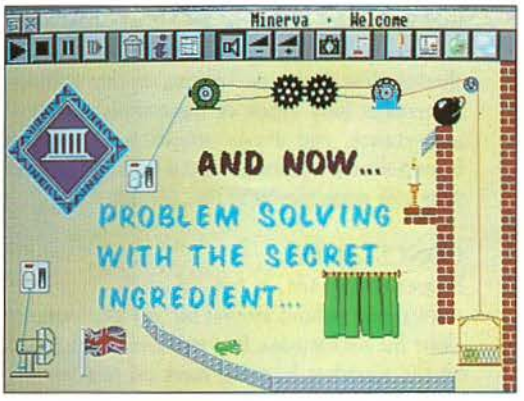

Figure 1.
Welcome to Prime Solver

First, password protected, is *Design* mode. Here you (typically the teacher) have a completely free hand and every gadget is at your disposal (just drag it onto the main window). Use it as many times as is consistent with available space. You may at this stage choose to restrict or specify those gadgets to be used by the solver later on. You can dry-run your puzzles at this point. A number of options controlling and describing the goals can be set - see figure 2.

Secondly, when satisfied, exit to *Experiment* mode. Here, everything is just as you left it, except that now the only changes which can be made (typically by the pupil) are adding and moving gadgets from the gadget box ready to run the animation for real. When this has been done, everything is set up, you are ready to animate in *Solver* mode.

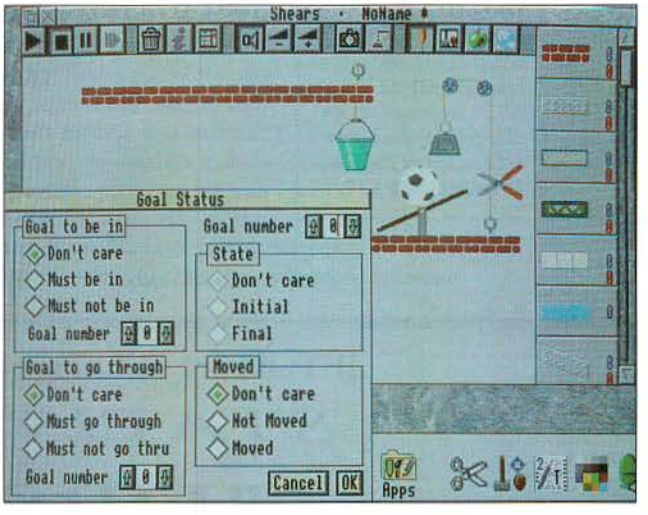

Figure 2.
Applying additional constraints to a puzzle using 'Goals'.

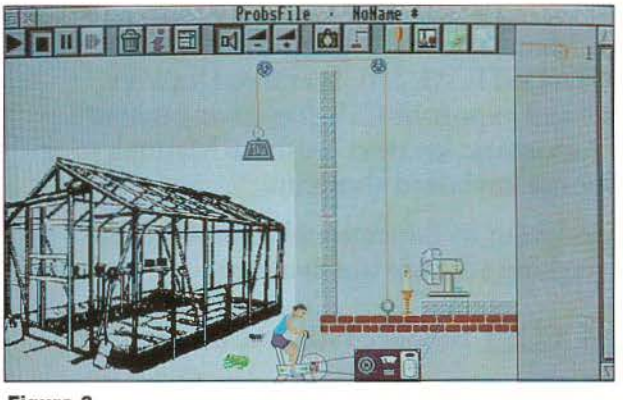

Figure 3.
A puzzle which incorporates a backdrop

If it works, thanks to the right interaction of the objects, careful aiming and sequencing etc, then you get a message saying 'Well done' plus a 'time taken'. If not, re-enter Solver mode and begin the cycle again. Usefully, you can configure the button bar to allow your users to access as many or as few of the operations as circumstances dictate. You use whichever gadgets and power have been provided in the puzzle to make something happen. There are no limitations on combinations and situations, other than those imposed in real life.

This is a situation where the freedom to experiment, to move and place gadgets accurately and easily is vital, and it's all there in the software. Puzzle states can be saved; preferences (for sound and 3D effects etc.) can be set and saved too. Indeed, sprites can be loaded to create a realistic backdrop with which to work and even interact (see figure 3). There are options to save 'snapshots' of your work, clear the work area to restart, and align to a grid etc.

A whole clutch of operations is available to control and prioritise goals; this is for the more ambitious and experienced; areas can be designated 'critical' such that specified objects must be inside, outside or have passed through them; or must be used. Yet the whole environment remains business like and uncluttered.

DOCUMENTATION

The 80 page A5 manual that comes with PrimeSolver is adequate, containing a tutorial, and several reference sections as well as descriptive chapters on each area of the suite.

Although potential uses for PrimeSolver will be largely obvious, some guidance for projects in real classroom situations would have been useful - particularly, perhaps, to the non-specialist in technology.

PRODUCT INFO

Product	*PrimeSolver*
Supplier	*Minerva Software* *Minerva House,* *Baring Crescent,* *Exeter EX1 1TL.* *Tel. 0392 437756* *Fax: 0392 421762*
Prices	*£79.95 single user licence* *£120 primary site licence* *£320 secondary site licence* *All prices exclude VAT.*

GROUP DISCUSSION

It is not only in its function in encouraging such skills, though, that PrimeSolver scores. It relies on logical and strategic thinking in pursuit of a specific goal. One of the best ways to exercise and develop these skills is through purposeful, directed interaction between pupils. This should mean many things, from giving and taking at the planning stage, through knowing when to sit back and watch a mate go wrong, to a debriefing on equal terms after an experiment, and help in sharing ideas during any writing up that follows. Minerva is fully aware of these skills and their importance, and draws attention to them in PrimeSolver's publicity material. Don't quieten your kids when they're at this, please!

CONCLUSION

PrimeSolver, then, is typical of the very best software of its kind around for any platform, let alone the Archimedes. It is well conceived, based on the soundest learning theories, and equally carefully produced and presented. For many teachers it will meet a definite and precise need.

Easy and versatile in use, PrimeSolver should find an immediate place in any basic library of problem-solving software; at its price and with Minerva's reputation for support, it represents great value for money.

What is needed now is for an enterprising group or individual to start a PrimeSolver circle so that teachers and pupils are able to exchange problems and solutions.

If YOU are thinking seriously about

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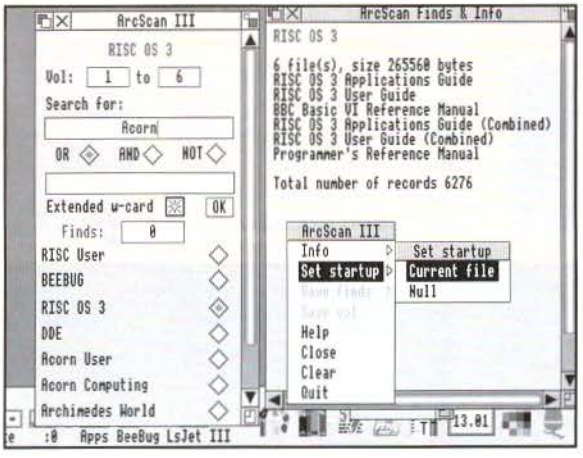

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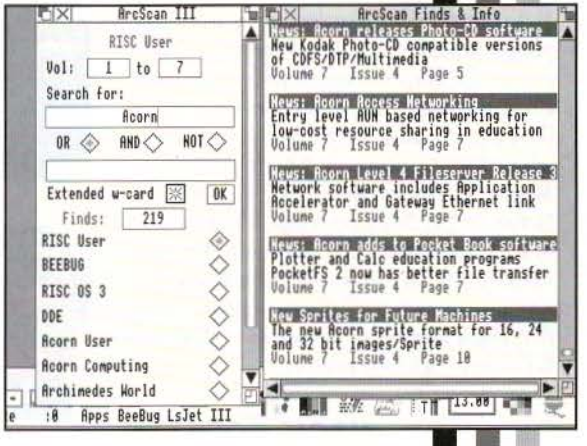
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117 Hatfield Road, St Albans, Herts AL1 4JS, tel. 0727 840303, fax 0727 860263.

Games Roundup

Alan Bonsor checks out the Archimedes games scene.

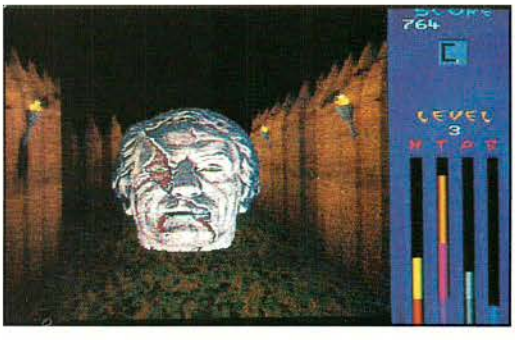
Lemmings 2 and *Simon the Sorcerer* are being very elusive. At the time of writing this review, I've heard of only one person who actually has *Lemmings 2* and *Simon the Sorcerer* seems to be wearing a cloak of invisibility. I shouldn't complain though, because I do have six recently released games sitting next to my computer - *Magic Pockets* by Renegade, *Warlocks* by Network 23, *Small* by Virgo, *Phaethon* by System Interrupt, and *Birds of War* and *Carnage Inc.* by the Fourth Dimension. I've also got some juicy information on games that might appear on the Arc later this year. But first, on with the reviews.

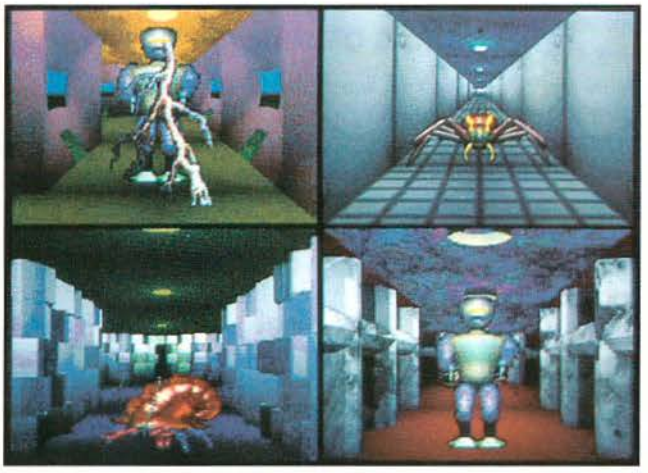
MAGIC POCKETS

Written by one of the best known games developers around, the Bitmap Brothers, and published by Renegade, *Magic Pockets* is a massive platform game. You are the Bitmap Kid, a cute little guy who's lost his four favourite toys. You have to traverse four worlds in order to find them, collecting sweets and zapping nasties with a bizarre collection of weapons - whirlwinds, clouds, ice blocks and snowballs - that pop out of the kid's magic pocket. What makes the game really challenging is what you can do with the weapons. Press the fire key once, and you'll produce small shots that inflict minimal damage. Hold down the fire key, however, and your pocket will start to expand. You can then fire a monster shot that traps any nasty it hits. Bursting a trap will release one of a variety of bonuses, the type dependent on how many bonuses you've already collected, what type of sweet you're holding in your hand, and how you burst the bubble. Bonuses include teleporters to secret levels, laser guns, and lots of other power-ups. *Magic Pockets* is a great game. It's challenging and addictive, and will keep you entertained for many hours.

SMALL

"As punishment for your arrogance and to teach you humility, the 'Gods' have shrunk you to a microscopic size and cast you deep into the labyrinthine realm of your mind. Armed only with a handful of 'star shots', you will be faced with vicious arachnids, hermits and keepers, relentlessly determined to halt your progress, and fiendish puzzles to test your ingenuity." Virgo Software's *Small* is a very enjoyable maze game in which you must escape from an "expanding web of ever more complex mazes" in order to return to normal size. Like *Warlocks*, its





graphics and sound effects are excellent. Over 95% of the graphics were designed and drawn with Clares' *Illusionist*, and a friend commented that *Small* contains some of the most original sound effects he's ever heard in a computer game. *Small* is one of the most entertaining games I've played in a long time.

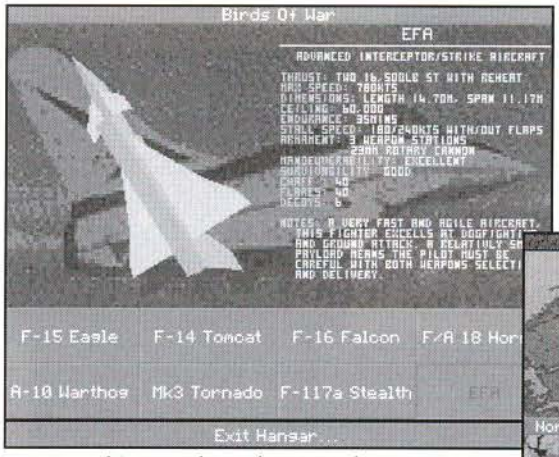
PHAETHON

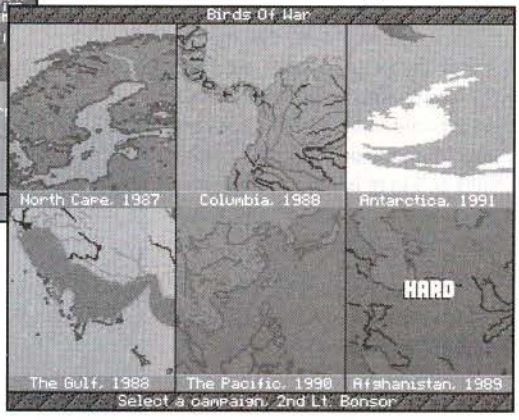
Fancy a bit of Snartlefish Baiting on Solumus Major? Nope? How about Snoozefootling on Galatican 6? You've been there and done that too? I've got just the thing for you. It's the ultimate challenge It's *Phaethon*. Remember those motorways they built between the planets - the ones that were then condemned as unsafe? Well, get a hold of this: *The Milky Way Rally* - an inter-planetary race across the entire galaxy. Cost? A lot less than you would expect. We'll give you a basic motorsphere and enough cash to purchase an engine, brakes, jets and thrusters. If you want anything else, you can purchase it out of the prize money. We provide a full range of custom kits. How about an XX-56 Turbo Fanjet "Super Power", a lilac paint job for your sphere and a Tommy Turtle cockpit freshener? Now the fun starts. We teleport you and your sphere to the start of each motorway and start the timer. If you don't reach the other end within the time limit... just sign this indemnity form over here please. What can you expect on the motorways? They're wild and wicked, with vicious twists and turns, big black holes, bombs and cannons. There's lots of sightseeing potential as well. These motorways are the eighth wonder of the universe. There are one hundred and forty of them, and it's going to take you a long time to work your way round them all. Just remember; in space, no one can hear you scream.

CARNAGE INC.

And to finish off the reviews, a quick look at the sequel to 4th Dimension's *Pandora's Box - Carnage Inc.* It's the usual story. Earth is under threat from an alien empire; major cuts in defence

budgets have left Earth unable to defend itself; and the tabloid press is having a field day blaming every politician it can. In a 3D isometric graphic adventure game, you have to travel through over 200 screens, collecting dozens of objects and working out what to do with them, and meeting interesting aliens and killing them. Unfortunately, working out how the controls operate is an ingenious puzzle in its own right, and this is compounded by the fact that the manual doesn't actually tell you how to start the game or redefine the keys - F1 and F2 respectively. I can't really give *Carnage Inc.* a glowing recommendation. I want to see Archimedes games which are so good that Amiga users rush out and buy an Arc. *Carnage Inc.* certainly wouldn't.





PRODUCT INFO

Product	*Magic Pockets*	*Product*	*Phaethon*
Supplier	*Renegade Unit C1, Metropolitan Wharf, Wapping Wall, London E1 9SS.*	*Supplier*	*System Interrupt Burcott Manor, Wells, Somerset BA5 1NH. Tel. 0749 670058 Fax 0749 670809*
Price	*£25.99 inc. VAT*	*Price*	*£25.95 inc. VAT*
Product	*Warlocks*	*Product*	*Birds of War Carnage Inc.*
Supplier	*Network 23 73 Sylvan Avenue, East Cowes, Isle of Wight PO32 6SJ. Tel. 0983 290347*	*Supplier*	*The Fourth Dimension 1 Percy Street, Sheffield S3 BAU. Tel. 0742 700661*
Price	*£29.99 inc. VAT*	*Price*	*Birds of War £34.95 inc. VAT Carnage Inc. £25.95 inc. VAT*
Product	*Small*		
Supplier	*Virgo Software P.O.Box 44, Cheshire SK7 4QY. Tel. 061 456 0009*	*Most of the games are also available from Beebug and other good Acorn dealers.*	
Price	*£24.95 inc. VAT*		

BIRDS OF WAR

Birds of War is the 4th Dimension's third flight simulator, and sets a record for being the Archimedes' biggest game to date, coming on seven discs and requiring up to 9Mb of hard drive space. With 32 aircraft available for you to fly, ranging from the Sopwith Camel and Spitfire to the F117a Stealth bomber and the EFA (European Fighter Aircraft), in 192 missions, *Birds of War* should have enough to keep even the most demanding flight simulator enthusiast enthralled for many months. However, I'm unimpressed and disappointed with two things. Firstly, although the graphics are better than in previous flight simulators for the Arc, they're incredibly poor when compared to what's available for the PC. Secondly, the documentation is appalling, providing no information on the cockpit instrumentation, the head-up-display, or the types of aircraft available, although a description of each plane is provided in the game itself. If you're a flight simulator fanatic and you don't mind a lot of detective work, then you can't really go wrong with *Birds of War*. If you've never used a flight simulator before, I'd recommend starting with the 4th Dimension's *Chocks Away* or Clares' *Interdictor II*.

WARLOCKS

Network 23's advertising for *Warlocks* claims that it "stands head and shoulders above the competition, pushes the Arc to new levels of excellence, and features breathtaking graphics and animation, atmospheric music and sound effects." It is very easy to be sceptical of such grandiose claims, but now that I've actually played *Warlocks*, I am inclined to agree with

Continued on page 60

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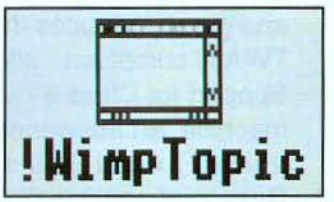
RISC User Disc April 1994

Shrink

This most convenient application allows any window open on the screen to be shrunk so that only the title bar remains visible on the Desktop. This gives clear identification of the window function, unlike the iconising process provided by RISC OS 3, but is just as easy to use.

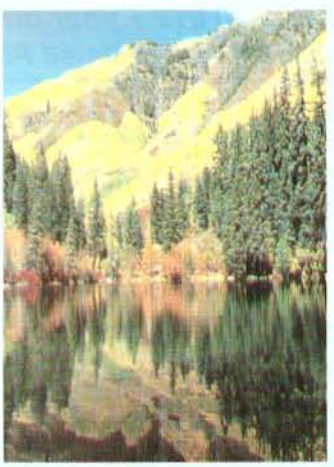
Wimp Topics



The routines included on this magazine disc provide all that is required for efficient memory management within any Wimp application. The routines are fully described in this month's Wimp Topics article.

Irlam Scanned Image

The magazine disc contains an example of a 24-bit sprite produced by the Irlam colour scanner system reviewed in this issue. Instructions on how to access the sprite using ChangeFSI are also included.



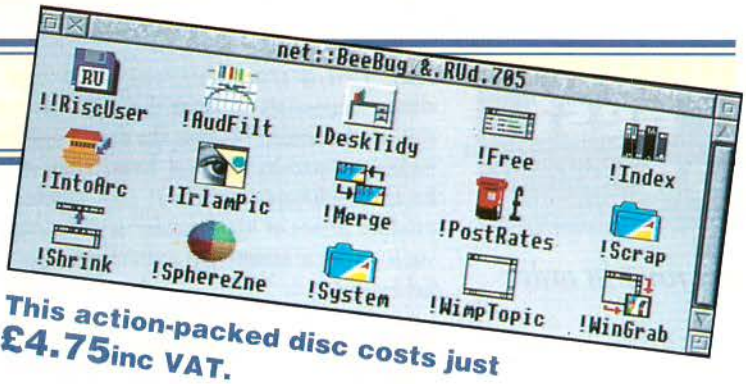
Into the Arc

We have included the three short Basic programs described within the article on 16 colour modes in this month's magazine, together with a separate program to enable you to explore the full range of possible colours in such modes.

ADDITIONAL ITEMS DESCRIBED IN THE MAGAZINE

DeskTidy

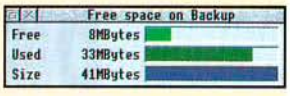
DeskTidy provides a collection of twelve directories with attractively designed icons which allow you to organise groups of files on your Desktop in a more eye-catching and meaningful style than normal.



This action-packed disc costs just £4.75inc VAT.

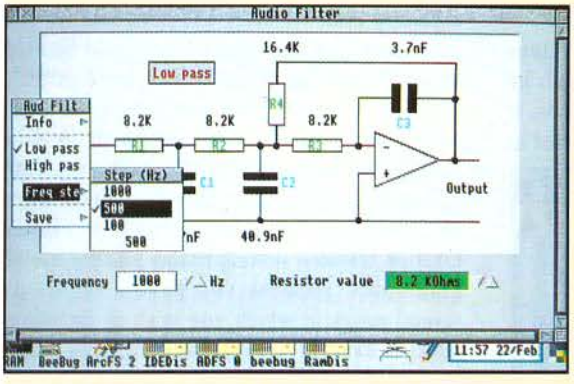
BONUS ITEMS

Free Space Display



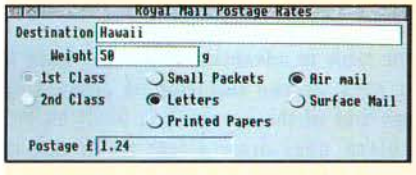
RISC OS 3 provides a three-bar display in response to the Free command with recognised filing systems. This application extends the same three-bar display to cover any filing system which you may have in use which does not provide this facility.

Audio Filter



This application provides an easy means for the enthusiast to design low pass and high pass filters. It may also have application in science and technology classes in schools. The screen display provides instant update as values are changed dynamically.

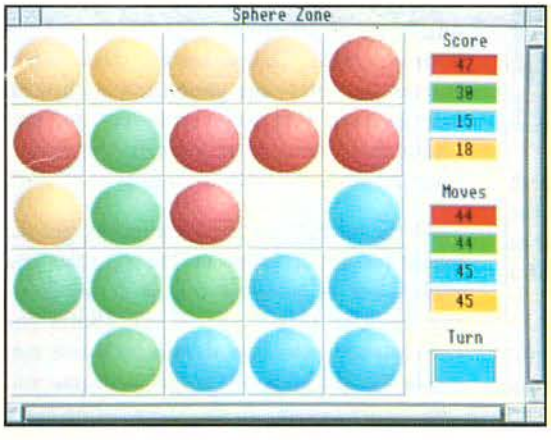
Postage Rate Ready Reckoner



This is a very practical application which allows you to calculate the cost of postage anywhere in the world, from an airmail letter to a heavyweight surface mail parcel. Uses ASCII data file to facilitate updating when new rates are introduced.

Window Grabber

This application has all manner of uses. Essentially, it provides a quick and easy way to grab the contents of any window, including the window borders, as a sprite. This can then be saved or exported as required, and is an obvious boon to anyone preparing documentation, manuals, handouts etc.



Sphere Zone

This is an extremely well implemented Desktop game in which you pit your wits against three other players for mastery of the board. Delightful sound effects add significantly to the appeal of this game.

ArcScan Data

ArcScan Indexes for this month's RISC User and BEEBUG Vol.12 No.9.
toboganing

Getting the best from Ovation

Maurice Edmundson puts your rows in order using Ovation.

DRAWING TABLES IN OVATION

Some months ago a correspondent introduced me to a technique which he used in designing family trees within Ovation. It was an excellent idea which I have since used in a variety of situations and I feel it is worth passing on to other users. I will call it the principle of "stacking frames". As an example of the principle I will consider how to construct a table within an Ovation document.

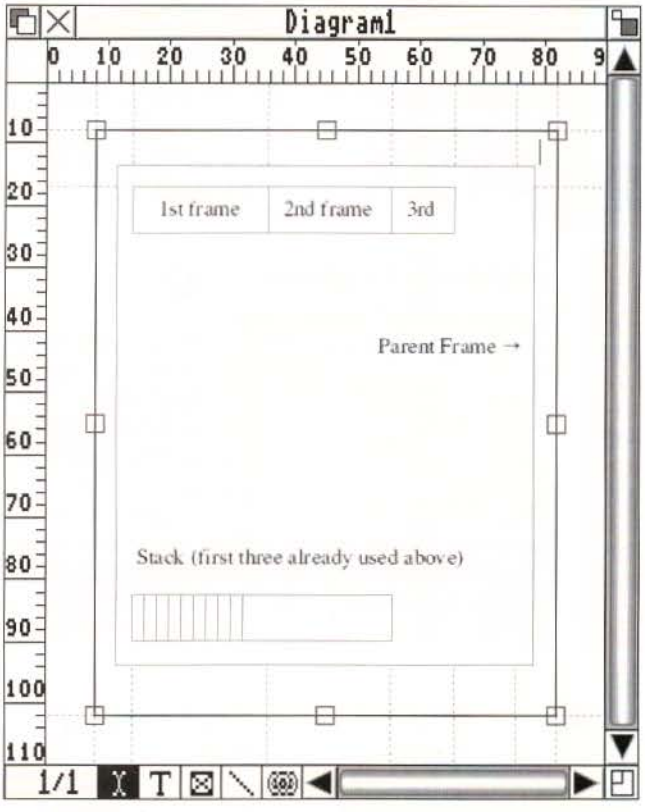


Figure 1. Ovation document with stack of frames

You might think that you could draw the grid for a table very quickly using the line drawing tool. This is true, but you would find it almost impossible to enter the data into each slot on the screen because the text would not be constrained by the grid lines. That would be the technique to use if you needed to produce prints of blank grids for data logging such as in a scientific experiment or for fieldwork.

For completed tables on screen, a better way would be to draw, on an Ovation page, one text frame for the top left hand corner slot, add a thin border, then duplicate it as often as necessary both vertically and horizontally. The data you typed into each frame would be held within that frame (it could be centred in each slot, for example). The method works quite well, however, you may not require all the data slots to be the same size. Using the stacking principle gives much greater flexibility. I am also coupling the technique with two other Ovation features: nesting frames and the use of guidelines. Suppose you have a report of several pages in which you wish to include a table of data. In what follows, you can either prepare the table on the page where it is to appear, or you can prepare it on a spare blank page and transfer it to its proper place when you are finished and satisfied. Let me assume the latter.

Plan the table in advance, so that you have a rough idea of the number of rows and columns and of the size each is likely to be. On a blank page draw a text frame about 10mm wider and 30mm deeper than the probable size of the finished table. The extra depth is to provide work space for the stack. At the lower left corner draw a text frame roughly equal to the commonest size of slot required, and add a thin border. Now duplicate it 20 times (say) with a 2mm horizontal shift. This makes the stack. When frames (or lines) are generated within an existing frame they become "nested" and will retain their position relative to the parent frame however the latter is moved.

Show the rulers (from the View menu), put the mouse pointer at 20mm on the top ruler and click Select. A guideline will be drawn down the page at this point. I say 20mm for convenience - the line should be a few mm inside the left edge of the parent frame you

have prepared. A guideline can be moved by touching it (off the ruler) with the caret which changes to the pointer; then (as with all objects in Ovation) use the Adjust button to slide it along. It can be removed altogether by sliding it off the edge of the page. Add further vertical guidelines at the positions where the grid lines (columns) are required until you reach the one for the right-hand edge of the table. The columns can be of varying widths. Finally, add a horizontal guide line a few mm below the top of the parent frame to which to align the upper edge of the table. Note that the guidelines will not be visible inside the parent frame but in practice this is not a handicap.

Now activate the top frame in the stack and with the Adjust button slide it to the top left corner until it snaps into position set by the two guidelines. The "snap" is very positive and accurate. Now drag the right-hand edge of this first frame until it too snaps onto the next guideline in order to position its right-hand edge correctly. Drag the lower edge of the frame to the depth you want (we have not drawn guidelines for the lower edges i.e. for the rows). You now have the first slot of the grid. Slide other frames from the stack in the same way, snapping each one to a guideline and/or to the previous frame, until the whole grid is finished.

As a rule you will keep the row depth constant along each row, but it is possible to have one slot equal for example, to the depth of two rows. If you are in doubt about a slot holding all the data or text required, fill this slot now, so that you can adjust it to suit. The headings to a table frequently have larger slots than the data beneath them, and they may be separated from the other rows by a double line. The extra line can be added using the draw tool - add a guideline first.

Delete any unused frames from the stack. If viewed at 300% any slight errors between frames can be corrected. If you have not already done so, enter all the data into every slot, using appropriate fonts until the table is finished. Reduce the parent frame until it is only just a little larger than the grid on every side. Temporarily hide the guidelines to see how the table will look when printed. Now activate the parent frame and from the *Object* menu choose *Copy Text Frame*. Bring up the document page where the table is to be installed and paste it (*Object* menu) on to the page. Use the Adjust button to slide it into position. In all these moves, the nested frames and lines will retain their correct position.

RISC Ltd	Cast Widgets type 1.	Model	Volume	Tax
Sanded casting		325c	10,256	8%
After treatment (a) matt finish		325m	6,435	11%
(b) enamelled		325e	3,821	15%

Typical table constructed with frames

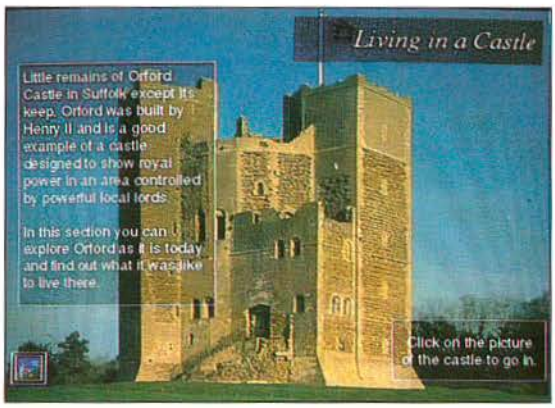
If you want to include a diagram in the table e.g. a logo or graph, this can be done by using a picture frame during the construction of the grid. If you did not want the grid lines to show, then the stack should not have borders. Instead, the parent frame would finally be closed up to the sides of the table and be given a border. This would then print as the outer frame of the table. You can also use the snapshot facility in Paint to make a sprite of the table which could then be transferred into any size of picture frame in a document.

There are many other situations where a prepared stack of frames can be useful and time-saving: as already mentioned, for designing a family tree; for designing a questionnaire where there is a reply slot at the end of each question; wherever there are many frames of different sizes scattered about the page.

Education: Key Moves Part 2

Chris Drage completes his look at the educational resources provided by Anglia TV's Key Plus series by investigating the recent series of CD-ROM titles.

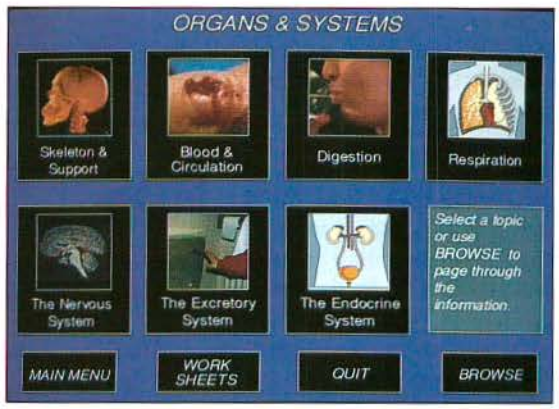
Anglia TV's successful Key Plus is used in over 2000 secondary schools, and there is a huge range of datafiles available. With CD-ROM format offering such a rich vein of resource material for schools - full colour photographs, video clips, sound, animations and interactive text - it is not surprising to find that Anglia TV is keen to employ this medium. Not only are some splendidly detailed databases possible, but as a bonus the resources are available for pupils for inclusion in their own work - an aspect both Anglia and Acorn are keen to promote.


Living in a Castle
Little remains of Orford Castle in Suffolk except its keep. Orford was built by Henry II and is a good example of a castle designed to show royal power in an area controlled by powerful local lords.
In this section you can explore Orford as it is today and find out what it was like to live there.
Click on the picture of the castle to go in.

Castles - Living in a Castle

The first six CD-ROMs are already available, and each differs considerably in style and content, providing some insight into future trends in in this format. *Countries of the World* and *Counties of Britain* are collections of accurately detailed maps for integration with existing KeyPlus datafiles. *19th Century Biographies* is an illustrated datafile, whilst *World War II - The Home Front* is a collection of high quality photographs. The two most interesting discs are the free standing *Understanding The Body - Human Biology* and *Castles*.

Biographies, Countries and Counties each comprises datafiles for Key Plus, although each holds data which can be read by KeyNote (version 2 or greater), when not all fields are available. The Biographies disc holds over 250 biographies from the 19th Century: scientists, inventors, politicians, explorers and social benefactors all catalogued by date, country, role, and colleagues, together with a biography and, in most cases, accompanied by a photograph from the Hulton Deutsch collection (over 170 in all). It is essentially an extended version of material previously distributed on floppy disc and follows the same successful formula.



Understanding the Body - Organs and Systems

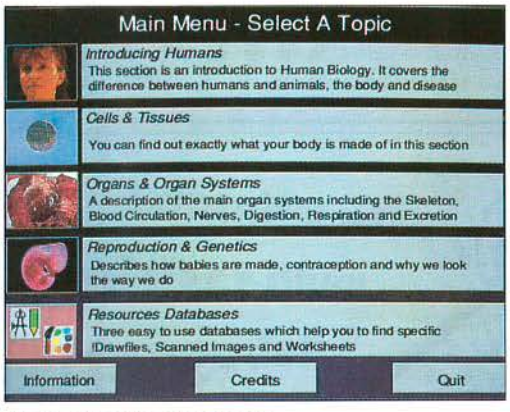
Obviously with a compilation like this, everyone will complain that someone was left out, and there has been a deliberate cut-off of all those who died after 1910. One rather obvious imbalance is the number of women represented in the database (35 in total). I suspect Anglia had problems here and if anything it is a symptom of the period in question.

Undoubtedly the one aspect that sets this datafile above the floppy disc variety is the inclusion of high quality photographic stills, all of which are available to the pupil. This is further enhanced by the ability in the Key series to export data to a variety of graphs and statistical charts to allow interesting analyses of role, nationalities and gender to take place. Extracting data in the form of sub-files for analysis on other computers, not equipped with CD-ROM facilities, is extremely easy. A useful resource for secondary pupils who require a brief resumé of a famous 19th Century personality.

The two mapping discs have been compiled in association with mapmakers Bartholomews, and these have several notable features, not least of which is the ability to select a range of items such as roads, contours, rivers, railways and boundaries onto which

data comprising lines and points (expressed in longitude and latitude) or area information, can be plotted (Key Plus v3.0 or greater). Each disc contains a small example datafile and a selection of high quality photographic stills for each map to get you started. Maps of varying scales are included, as scaling by zooming on maps has proven to be too slow and expensive on memory. The Counties disc, for example, enables movement to county or region level for the whole of the UK. Similarly, as there is no provision on computer-based maps for insets, so typical of atlases, provision is made to export maps to other programs for labels to be redesigned and repositioned.

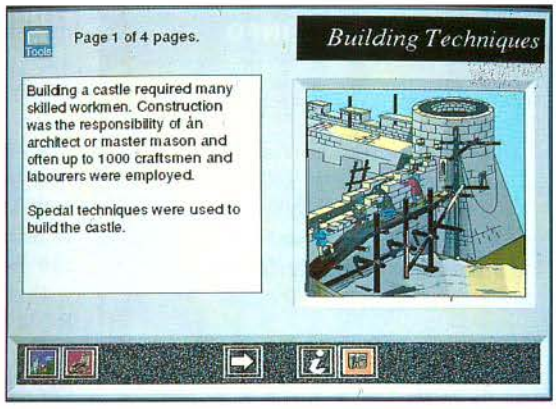
The various members of the Key family offer a range of facilities for use with the maps. For example, the spreadsheet Key Calc has a DIST function which enables global distances to be calculated, whilst KeyNote enables younger pupils to plot data onto a map then drop symbols onto it to illustrate their findings. All modern mappings use vector techniques on the computer, and these Key Plus maps effectively bring this system into the classroom.


Main Menu - Select A Topic
Introducing Humans
This section is an introduction to Human Biology. It covers the difference between humans and animals, the body and disease
Cells & Tissues
You can find out exactly what your body is made of in this section
Organs & Organ Systems
A description of the main organ systems including the Skeleton, Blood Circulation, Nerves, Digestion, Respiration and Excretion
Reproduction & Genetics
Describes how babies are made, contraception and why we look the way we do
Resources Databases
Three easy to use databases which help you to find specific !Drawfiles, Scanned Images and Worksheets
Information
Credits
Quit

Understanding the body

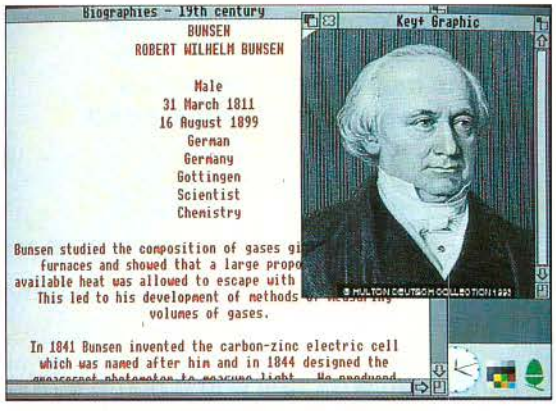
The jewels in the Anglia TV's CD crown are two multimedia CD-ROMs entitled Understanding The Body (UTB) and Castles, both self-contained Key Author applications which aim to provide 11 to 15 year olds with a rich source of learning resources - but one word of caution: you will need at least 4Mb of memory to run either of these two. The former CD-ROM contains a learning module designed squarely to fit National Curriculum requirements at Key Stage 3, but is so comprehensive as to be of use in a much broader context.

CD-ROM material for education should be richly endowed with quality photography, video, sound clips and animation. Well, UTB certainly meets those criteria in all areas except sound clips. Silent it may be, but it nevertheless offers a superbly structured tour of the major systems of the body, and of environmental aspects of human life. Providing some 50 activity sheets, there are many avenues of study that can be done away from the computer.


Page 1 of 4 pages.
Building Techniques
Building a castle required many skilled workmen. Construction was the responsibility of an architect or master mason and often up to 1000 craftsmen and labourers were employed.
Special techniques were used to build the castle.

Castles - Building techniques

Another criterion an educational multimedia CD-ROM must fulfil is to offer something a good reference book cannot. UTB offers over 50 video clips, a plethora of animations and a huge suite of illustrations in Draw format. These have been created in layers so that in many instances levels of the anatomy can be removed. *Castles*, too, contains a plethora of high quality illustrations, a large number of Replay video clips, vector graphics and animations on the subject of Norman and Medieval castles.



19th century biographies - Bunsen

Aimed at Key Stages 2/3, *Castles* is divided into five sections offering many avenues for study: 'About Castles' works chronologically along a time line tracing major technological

developments. 'Building a Castle' uses information and graphics in a hypertext format to describe all the resources (including human) in the process. 'Living In Castles' describes life in Orford Castle (Suffolk), whilst 'Castle Guide' lets you explore and meet the people at Chirk Castle in the year 1322 - the information being based on existing records. Scenes and inhabitant's roles are brought vividly to life.

PRODUCT INFO

CD-ROM Titles

1. *19th Century Biographies (£25.00)*
2. *Countries of the World (£40.00)*
3. *Counties of Britain (£40.00)*
4. *World War II - The Home Front (£25.00)*
5. *Understanding The Body (£40.00)*
6. *Castles (£40.00)*

Prices exclude VAT. All titles are are available from SCA (Anglia TV), PO Box 18, Benfleet, Essex SS7 1AZ, tel./fax 0268 755811.

The last section is a database of over 150 castles in Britain which can be viewed within the CD-ROM presentation or using Key Plus where extra map facilities come into play. Some of the video clips are excellent, and the media used in each section to illustrate and emphasise points is well chosen. Additionally, the disc carries a set of worksheets which enables pupils to move to and from the computer and undertake many other investigations.

Extracting data from Anglia TV's CD-ROM based resources could not be easier thanks in part to a well honed data retrieval/interrogation system offered by Key Plus and Key Calc, and the emphasis Anglia TV places on sharing visual resources with pupils. You may not be able to cut out a picture from a textbook to use in your own work but you certainly can from Anglia TV's CD-ROMs! Undoubtedly, Anglia TV's major contribution to CD-ROM development has been to provide a context which moves the medium from an encyclopedic, library-based resource into a general classroom context, capitalising on the power of the Archimedes range. Without doubt these first forays into the realms of CD-ROM - based resources are an unqualified success and augur well for the future. With GEST money providing schools with the means to equip themselves with CD-ROM drives, Anglia TV's initiatives must surely secure the success of the medium and at prices most schools can afford!

Written by regular RISC User contributor Alan Wrigley, Vigil allows you to view application workspace, Basic variables, ARM registers, Wimp messages etc., all while your program is running in normal multi-tasking mode! You can even alter Basic variables and workspace contents without stopping the program!

The ultimate multi-tasking debugger!

(for RISC OS 3.10 or later)

Acorn User said: *"If you're a multi-tasking programmer, buy it"*

RISC User said: *"invaluable in sorting out the intricacies of programming the Desktop"*

Some of Acorn's staff and a number of well-known software houses already use Vigil. If you write even the simplest Wimp-based programs, you will find it invaluable too.

And the best feature of all is the price - only £24.95 inc. VAT and p&p!!

Access

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VISA

The Eagle Has Finally Landed

Alan Wrigley reviews Computer Concepts' new multimedia card.

Way back at the Acorn User Show in October 1991 Wild Vision was demonstrating its Eagle system which provided real-time video on the Desktop. In RISC User 5:3 I reviewed a similar product from Irlam Instruments called Moving i-Mage, and fully expected to cover Wild Vision's card shortly afterwards. Since then, of course, Wild Vision has merged with Computer Concepts, and the Eagle was taken back to the drawing board. What has finally emerged is the *Eagle M2*, a complete multimedia card which not only provides the real-time video facility (with single-frame grabbing as with a digitiser), but also audio and MIDI as well. Whereas the original Eagle was designed as a full-width board, all the electronics are now packed neatly onto a half-width board.

THE PACKAGE

The Eagle card is suitable for any RISC OS machine that can take standard expansion cards, i.e. A300/400/500 and A5000, and the A3000 using the external expansion slot. Some of the facilities, such as sound output and movie-making, require an ARM3. Four sockets are provided on the card: composite video (BNC), S-Video (mini-DIN), stereo audio in/out (5-pin DIN) and a single 9-pin D socket for MIDI. A cable is supplied which distributes the MIDI signals to three DIN plugs which provide the normal in, out and thru connections. A range of software for controlling the card is also supplied on five discs, including *TakeTwo* which controls viewing live video and grabbing video frames; *AudioWorks* for sound editing (reviewed in RISC User 7:4); *ScanLight Plus* which is the image-manipulation software normally supplied with CC's scanner but which can process grey-scale sprites from any source (see RISC User 7:2); and the Acorn Replay applications *ARMovie* and *ARPlayer*. For Replay processing, a powerful compression package from Eidos called *ESCaPE* is also included.

So what can you do with it? Firstly, you can connect a video source to the card and view the output live on the Desktop. This could be a videotape, broadcast TV (via a video recorder or TV set that outputs the signal as video), a camcorder or a still camera such as the Canon Ion. Single frames can be grabbed as sprites (up to 24-bit) or other image formats just as with a digitiser, ready for processing by ScanLight Plus, or the moving image can be processed into a Replay movie. Secondly, you can connect a stereo audio source and/or output to the card. This enables you to sample sound at up to 12-bit precision from a standard audio source such as a CD player, or the audio signal from a camcorder. You can then process it with AudioWorks or use it as a Replay movie soundtrack. Since the audio connection is two-way, you can also output stereo sound from the computer to a hi-fi system or elsewhere. Thirdly, Eagle provides the facilities of a standard MIDI card so that you can interface MIDI instruments to your Archimedes.

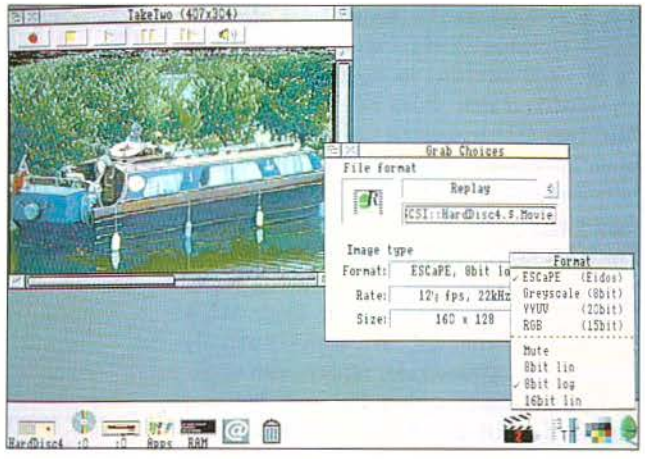
VIDEO CAPTURE

To view live video on the screen, all you have to do is to connect a video source to the Eagle's connector and run the TakeTwo application. This opens a window within which the moving image is displayed in colour in real time. The window can be resized up to the full size of the screen if required, and an option allows you to preserve a 4:3 aspect ratio for the picture as you resize it. The window has VCR-style buttons allowing you to grab a single frame as a sprite (including new format 15- and 24-bpp) or as a TIFF or CLEAR file, to record a Replay movie, or to play back a previously recorded sequence.

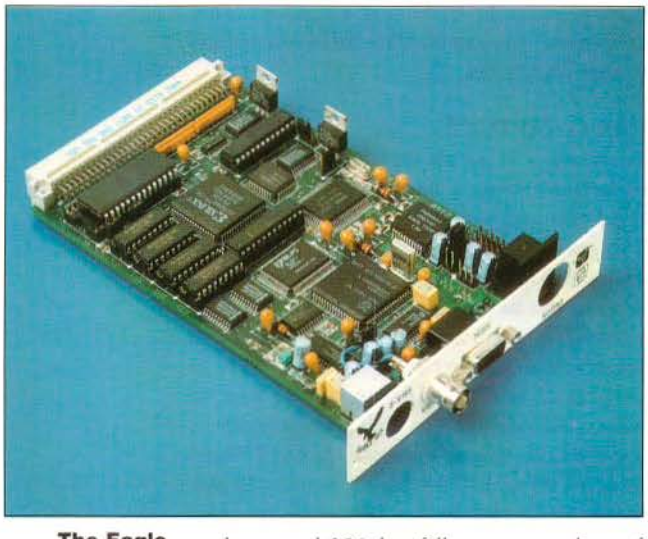
Sound is not available via the video input, but since the Eagle has audio facilities on the card it can handle sound as a separate source. Most VCRs have separate outputs for audio, or a SCART connector which carries both video and audio. Connecting this to the Eagle's sound socket effectively gives you a full audiovisual input.

I said earler that the video is displayed in real time. This requires a little qualification. Screen

display on the Archimedes needs a lot of processor power, and on a standard machine it is subject to the normal limitation of a maximum of 256 colours. As a result, movement is slightly jerky, particularly at larger window sizes, and the colour is not faithful to the original. Irlam's Moving i-Mage overcame this by injecting the video directly into the monitor signal in order to bypass the internal circuitry and give smooth full-colour motion. You can get closer to this ideal if you have a graphics enhancer such as the ColourCard Gold (see the product information section for a special offer from CC). However, even with this fitted, movement is still a little jerky except at very small picture sizes, and you still only get 32768 colours on screen. This is a huge improvement on the normal 256, but falls some way short of the 2 million or so required for broadcast quality, and the dithering is still noticeable. It remains to be seen what the performance will be like with Acorn's next generation of machines. Eagle is quite capable of handling 24-bit colour provided there is the means to display it.



A live video source being displayed on the desktop using Eagle and TakeTwo



The Eagle MkII card

Creating a Replay movie is simplicity itself. You just tell Eagle whether you want to use the ESCaPE compression routines or Acorn's own, drag a file icon to set the pathname, and click on the record button. The power of ESCaPE lies in its ability to compress and store movies in real time, so creating a movie is now a one-stage process taking no longer to complete than the length of the movie. To put this staggering achievement into perspective, compare it with the conventional method of making a Replay movie, as used by Irlam's Replay DIY for example. First of all an intermediate file has to be produced (requiring around 21Mb of hard disc space per minute of movie), and this must then be compressed and compiled into Replay format, which takes up to 2 hours per minute. This gives you some idea just how powerful ESCaPE really is. Not only this, but the finished Replay file is about half the size of a similar length movie produced by Replay DIY.

The bad news is that ESCaPE will only work at 12.5 fps - it would be a miracle to expect it to do any more. However, you can create 25 fps movies with by using the Acorn routines instead, but you do need a very fast computer to handle it.

Movies compiled with ESCaPE have a different quality from those produced with Replay DIY or other software using moving line compression algorithms. Moving line compression introduces a kind of shimmer to the movie - difficult to describe but if you've seen a conventional Replay movie you'll know what I mean. An ESCaPE movie, by contrast, has a more stable picture, though the pre-release version supplied for review suffered from both a very slight reduction in clarity and poorer rendering of colours, which on some subjects was more noticeable than others. Given the amazing feat that ESCaPE achieves this

working in real time, this is quite understandable. The difference is most noticeable if you compare an ESCaPE movie with the professionally-produced movies on Acorn's Replay CD-ROM Sampler. The Acorn movies have bright, bold colours but the shimmering is quite noticeable.

CC tells me, however, that the ESCaPE software has since been improved, particularly with regard to the colour rendering, so my assessment may no longer apply. If that is the case, then ESCaPE represents a real breakthrough in movie techniques. In any case, you may well find that the speed, improved picture stability and superior compression more than make up for any slight reduction in quality.

Unfortunately the Eagle that was supplied for the review flatly refused to let me make a movie using the Acorn routines as it should have done, so I couldn't examine any movies made by this method. I would expect the results to be comparable with Replay DIY since the same techniques are used, with the added bonus that if you have a fast enough computer you can make 25 fps movies as well.

SOUND HANDLING

Eagle has a single DIN socket which provides audio line input and output. The input side enables you to send an audio signal to the computer where it can be sampled and processed by software such as AudioWorks, or used as the soundtrack for a Replay movie being compiled from the video source at the same time. The audio output allows you to connect an external amplifier so that sound from the computer can be played through a hi-fi system or recorded onto audio or video tape.

The manual specifies a line-level input, "...such as hi-fi equipment, CD player or amplifier". It requires at least half a volt to get the best out of the Eagle, and not all hi-fi equipment can match this. Though I tried using two good-quality audio amplifiers, a cassette deck, a VCR and a CD-ROM drive (all supposedly producing standard audio line-level output), I found that a CD player was in fact the only piece of my own equipment that would generate a high enough signal to drive AudioWorks via the Eagle. With all the others, the sampled amplitude levels were low and in some cases the sound was slightly distorted. Amplifying the samples in AudioWorks merely distorted those that were not already so.

Unfortunately the soundtrack on Replay movies is also affected if the source equipment doesn't put out a high enough signal. Most camcorders should be all right, but you may find that the output from some VCRs is not as high. I found this to be the case when creating a movie from videotape - the soundtrack was noticeably poorer than earlier movies I had produced from the same source using Replay DIY.

There was no such problem with audio output. All the sound generated by the computer can be directed through the Eagle, and connecting the output to an amplifier adds a new dimension to many games and other programs that use sound extensively. You could also use this facility to record your own compositions onto tape, or to add computer-generated soundtracks to your videos.

CONCLUSIONS

If you want to view broadcast-quality video on your Desktop, or incorporate it into training systems, then you need Irlam's Moving i-Mage. If you want professional-quality 16-bit sound sampling, then you will have to go for one of the new 16-bit samplers (Irlam's *SoundCard* or CC/Wild Vision's *Lark*). However, for a fraction of the price of a professional system based on these items, the Eagle provides all the same facilities at a standard which is perfectly adequate for many multimedia requirements, with the MIDI interface and a wide range of processing software thrown in as well. I would like to see the sound input tweaked a little so that any item of hi-fi equipment will drive it properly, otherwise many people with standard amplifiers and VCRs may be disappointed with the quality of their Replay soundtracks and AudioWorks samples.

PRODUCT INFO

Product	*Eagle M2*
Supplier	*Computer Concepts*
	Gaddesden Place,
	Hemel Hempstead,
	HP2 6EX.
	Tel. 0442 63933
	Fax 0442 231632
Price	*£351.32 inc. VAT.*
	£585.15 inc. VAT
	with ColourCard Gold.

Despite my reservations about the sound, the Eagle M2, with so much functionality on board, has to be considered good value as a comprehensive multimedia add-on. *uR*

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INTELLIGENT INTERFACES

Desktop C - The Data Transfer Protocol

David Spencer takes a look at a protocol central to the multi-tasking Desktop.

One of the great strengths of RISC OS that puts it above the likes of MicroSoft Windows or the Apple Macintosh desktop is the ease with which files can be loaded, saved and transferred between applications simply by dragging them around. However, as is life, this simplicity for the user is only achieved at the cost of additional complexity for the programmer; in this case in the form of the *Data Transfer Protocol* - the set of rules that control the moving of data between applications. It is the Data Transfer Protocol and its subtleties that form the basis of both this article and next month's.

SAVING DATA

We will start by looking at how a file is saved from an application by dragging. In this context, 'saved' means both saving to a directory display, and transferring to another application. The word 'file' is also rather abstract, because although traditionally the item dragged will be an icon representing a file, the new Style Guide defines the concept of drag-and-drop, where, for example, the user can select an area of text and drag it directly to another application. (This can be seen in Acorn Advance.) Although to the user this is quite different from saving a file, the underlying use of the Data Transfer Protocol is almost exactly the same. The Data Transfer Protocol relies on the Wimp's message passing system that allows one task to pass a message to another task (or broadcast a message to all tasks). If you are not familiar with messaging, then you should read the description of SWI "Wimp_SendMessage" in the PRM.

Assuming that dragging the icon representing the file to be saved has already started (more later), the Wimp will return a User_Drag_Box event when the icon is dropped. The application can then call SWI "Wimp_GetPointerInfo" to find out the handle of the window over which the icon was dropped, and then send a DataSave message to the owner of that window. Within the DataSave message is the type of the file, its estimated size and the proposed leafname (usually taken from the save box). Note that the size is only an estimate and doesn't actually need to be supplied. Correspondingly, the receiver shouldn't rely on the size being correct.

If the receiving task is interested in the file (i.e. it is an acceptable type), it returns a DataSaveAck message to the task performing the save. In the case of a drag to a directory viewer, the leafname is replaced by a full path name to which the file should be saved. This is derived from the leafname and the pathname of the directory viewer. For drags to another application, the name "<Wimp$Scrap>" is returned. When used this will expand into the pathname of a suitable temporary file. In this case, the estimated size is also set to -1 to indicate to the saving task that it is saving to another application and not to a permanent destination. Either way, the original task saves the file to the given pathname and then sends a DataLoad message as confirmation of the save.

At this point, if the save was to another application, it loads the data in the temporary file pointed to by <Wimp$Scrap> and then deletes that file. Finally, a DataLoadAck message is returned to the saving task to say that all is finished. On receipt of this, the task can, if it wishes, check to see if the save was to a directory display, and, if it was, perform tasks such as changing the window title to the pathname, and marking the file as unmodified. In all cases, all but the DataSave message is sent 'recorded delivery' to keep an eye on what is happening.

If this all seems totally horrendous then you are right! Luckily for C programmers, RISC OS_Lib provides some nicely packaged functions at two levels defined in the *saveas.h* and *xfersend.h* headers.

USING SAVEAS

By far the easiest method to use is the function *saveas()*, which takes the form:

```
BOOL saveas(int filetype, char *name,
            int estsize,
            xfersend_saveproc,
            xfersend_sendproc,
            xfersend_printproc,
            void *handle)
```

This may seem quite daunting, but it is actually very simple. The first two parameters are simply the type of the file to save, and the name that is

to appear in the save box. This can be a full pathname or just a leafname. The third parameter is the estimated size as mentioned above, and the next three parameters are pointers to functions to handle the saving. The final parameter just allows a handle to be passed to these functions, for example, allowing the same function to be used for several different save operations within an application.

What *saveas()* does is to open a standard save box, using a template called "xfer_send", which must be in the application's template file. This is best copied from one of the standard applications such as *Edit* to ensure that the icon numbering is correct. The sprite used in the save box is determined by the filetype given, and the name passed to the function is put in the box. *saveas()* handles all the nitty-gritty bits such as allowing the user to edit the name and start the dragging. When the dragged icon is dropped, the function also automatically identifies the recipient, sends the DataSave message and handles the returned DataSaveAck.

At this point, *saveas()* involves the application again by calling one of the three functions specified in the original call. The *xfersend_printproc* function is called when the file has been dragged to the printer driver icon, and is part of a now obsolescent print protocol used in RISC OS 2. Normally, this pointer should be set to zero in the original call, which will stop any attempt being made to call it. However, more details can be found in the PRM and ANSI C User Guide if needed. If the *xfersend_sendproc* function is called then it means that the recipient of the file is another application and it wishes to adopt a direct RAM transfer instead of using the <Wimp$Scrap> method described above. This will be dealt with next month, but in the meantime if this function pointer is set to zero, then the recipient will be forced to use the temporary file method.

This just leaves us with the *xfersend_saveproc* function which takes the form:

```
BOOL func_name(char *pathname,
               void *handle)
```

All this function needs to do is to save the file to the full pathname that it is passed, and return TRUE if this was successful. If the save fails, for example, if an error is returned by the actual filing system save call, FALSE should be returned instead. The parameter *handle* passed to the function is just the parameter of the same name passed to the original *saveas()* function. The use that this is put to, if any, is entirely up to the programmer. A typical use would be to identify which window to save data from in an editor that supports multiple documents.

Having completed the save, *saveas()* will either leave the save box open or close it depending on whether Select or Adjust was used, and return TRUE if the save succeeded, or FALSE if it failed. In the case where the user simply enters a pathname and clicks on 'OK' or presses return, *saveas()* bypasses the Data Transfer Protocol and calls the *xfersend_saveproc* directly. However, the application is totally unaware of this and cannot tell the difference from a normal drag save.

USING XFERSEND

saveas() works by making use of the xfersend functions which handle the actual Data Transfer Protocol. If you want anything other than the standard save box type save, then your application must call these functions directly. There are two main functions here of interest to us:

```
BOOL xfersend(int filetype, char *name,
              int estsize,
              xfersend_saveproc,
              xfersend_sendproc,
              xfersend_printproc,
              wimp_eventstr *e,
              void *handle)
```

and:

```
BOOL xfersend_pipe(int filetype,
              char *name, int estsize,
              xfersend_saveproc,
              xfersend_sendproc,
              xfersend_printproc,
              void *handle,
              wimp_t task)
```

The function *xfersend()* can be thought of as the backend of *saveas()*, in as much as you pass it the User_Drag_Box event and it does the rest, but you must create your own save box (or similar) and start the dragging.

xfersend_pipe() is again similar, but is used in cases where the transfer is not started by a drag. In this case, the handle of the receiving task is passed to the function. A typical use of this call would be the transfer of data between two applications that implement a 'hotlink' - for example sending a word from a Thesaurus to a Desktop Publisher.

Another useful call is *xfersend_file_is_safe()*, which can be called after *saveas()*, or *xfersend()* returns, to find out if the file has been saved to a permanent place (TRUE) or to another application (FALSE). *xfersend.h* also provides a

Continued on page 67

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AUTOMATING BACKUPS

Nathan Micholey

It is a little known fact that the Alarm application can be used to run Obey files at a predetermined time. This is very useful for making regular backups if you have a high capacity backup device such as a floptical disc drive or a tape streamer. To set up an automatic backup create an Obey file containing these lines:

```
WimpSlot -min 32k -max 640k
Copy ADFS::4.$ scsi::5.$ A~C~DFLN~PQR~S~T~V
```

You may have to change the filing system and disc names to suit your system. Save this on your hard disc and then drag the file to the Set Alarm window. After that, set the time for the first back up and the interval at which to repeat backups. Make sure the Task alarm button is switched on and save the alarm. Now you need never worry about backups again. Always be sure to use Shutdown in the Task Manager menu before switching off, just in case the backup starts. The Obey file can be modified to backup individual files or directories. With these smaller backups, it may be possible to use a floppy disc as the backup medium.

MAKING SMALLER IMPRESSION FILES

Pieter Schmidt

The *Impression !Default* document can be edited to remove unuseful master pages and styles, so that documents created use less memory and disc space. This is done by opening the *!Impression.Auto* directory and double-clicking on *!Default*. You then edit the document as normal, so you can add styles and master pages that you find useful, and take less useful ones out. By removing lots of master pages, you can reduce the amount of file storage used by Impression documents.

SPEED UP CFS

Alan Bonsor

When you are using the Filer to copy large numbers of files to a directory viewer on a Computer Concepts' CFS directory, you can temporarily save the temporary directory on the RAM disc, first making sure that it is at least a little bigger than the largest file to be copied. You can then move or copy the files much more quickly.

LOSING THE CARET

Peter Sowerby

The following program is useful for losing the input focus. It can be put in the *DeskEdit User commands* menu or used on its own. It is helpful when using programs that claim hot keys which are claimed by other applications. Running it will cause the window with the input focus to lose the caret, allowing the other program to receive the key press.

```
10 SYS "Wimp_SetCaretPosition",-1
```

Boot$Flag IMPROVEMENTS

Phil Sturdy

I have been using the *Boot$Flag* tip from RISC User 6:7 to prevent accidental restarts since I created a *!Boot* application. Unfortunately, a soft reset does not clear the system variables, and so prevents the boot sequence running again. This can be avoided by using the following line in the !Boot application's *!Run* file:

```
If "<Wimp$State>"="desktop"
```

Then Error This application cannot be Run from the Desktop This deals with all types of reset, yet prevents !Boot being run by the Filer. It will, however, not work with RISC OS 2, which does not define the Wimp$State variable.

WordPerfect SCREEN DISPLAY

Rev Andy McMullon

Running WordPerfect 5.1 in single-tasking mode on the PC Emulator or PC-Soft can often result in a truncated screen. The way around this is to go into DOS from within WordPerfect by pressing Ctrl-F1 and then issue the commands:

```
Mode 80,43
Exit
```

The screen will now be normal. This technique can be used with other programs, for instance to restore the flashing cursor in *Biblemaster*.

DDT MEMORY USAGE

P.D.Harrison

Users of 2Mb machines may experience memory problems while running *DDT*, Acorn's desktop Debugging Tool. The DDT problem occurs when, after having run a program under DDT, the program is recompiled. This frequently results in an error such as *Insufficient memory*. The memory can be reclaimed simply by using the Task Manager to reduce the RMA size as far as possible. This is because, although DDT releases its RMA claimed memory, the RMA is not shrunk back down to a minimum size. There should now be enough memory to recompile the program. The solution works not just for DDT, but also for other programs that claim large areas of RMA for short periods, such as *ArcFS*.

SPEEDING UP A HARD DISC

Nathan Micholey

After I had had my A440/1 for two years, I began to experience a reduction in the speed of reading and writing large files. The reason is simple. If ADFS cannot find a large enough block of free space on the disc in which to save the file, it breaks the file in to smaller pieces which can be accommodated in the free spaces available. This slows the reading and writing processes down considerably. The **Map* command can be used to see where the free spaces on a disc are, and how big they are. If your map is excessively long, with more than about 50 entries, then a **Compact* may help future performance slightly, but the following tip will make an immediate and very impressive speed improvement. I am fortunate enough to have a floptical disc, but any high capacity medium, such as a *Syquest* or *Econet* can be used for the following process. All you have to do is move the files from the hard disc to an empty directory on the other high capacity medium. When the transfer is complete and your hard disc is empty, move it all back again. Now ADFS will be able to allocate blocks large enough to hold each file in one contiguous block, so your disc will work much faster.

ROGUE SWIs

Alan Wrigley

Some time ago, I supplied a hint for RISC User to warn about the fact that occasionally a SWI call will corrupt a register other than those it uses directly. The same is unfortunately true of the processor flags. The PRM states that SWIs should return with all registers and flags intact unless otherwise indicated, but It seems that one of Acorn's own SWIs, *DragASprite_Start*, sets the zero flag on return. I discovered this after much tearing of hair while trying to work out why the sequence:

```
SWINE DragASprite_Start
BNE poll_loop
```

always caused the machine to crash. The answer proved to be that the branch was not being executed.

Perhaps readers might like to send in other examples of SWIs which do not preserve their registers as they should.

K VALIDATION WITH RISC OS 3.11

P.D.Harrison

There is a bug in version 3.11 of RISC OS 3.1 which can cause unexpected behaviour in icons using the new RISC OS 3 K command in validation strings. The K command cannot recognise the terminating ';', so interprets any following commands as a parameter to itself. This can mean that an A command following it will cause the K command to react to the cursor keys, even if it was not meant to, and the characters allowed by the A command will be ignored. In later versions of the OS this has been corrected, but it would be wise to put the K command last for compatibility with the bugged versions.

DRIVE INSTALLATION PROBLEMS

Dr.A.Phipps

When installing new hard discs or similar items of equipment, problems can often arise when, having successfully tested the disc with the cover of the computer off, it refuses to work when the cover is replaced. Similar problems can occur such as a disc refusing to work when the monitor is placed on the machine, but works perfectly otherwise. These obscure hardware problems can usually be solved quite easily though. They occur because the machine has been reassembled so that components such as disc drives are placed under unreasonable stress. Common causes are wires and ribbon cables being trapped between drives and screws being too tight. If, after experiencing such problems, a cable is found to be tightly wedged above the drive, then moving the cable elsewhere could be the solution. Sometimes, stresses can be relieved by loosening the mounting screws very slightly - thus giving them enough play so that unnecessary stress will not be placed on the drive in question.

Into the Arc: Colour Sense

by Mike Williams

This series of articles has been running in RISC User for a good many years now. Its purpose has always been the same: to provide a regular forum where technical topics can be explained simply and clearly for the benefit of less experienced computer users. I hope we have succeeded. A consequence of this approach is that topics for this column can arise in a variety of ways, not least because of letters from readers highlighting areas where the standard Acorn manuals have proved less than adequate. This month's topic was suggested in just this way: how to choose and control the use of colour when writing programs in 16 colour modes. And yes, this month's offering is also going to be a bit more programmer oriented than usual.

Now I am intending to take a simple approach to this topic, so we shall not be writing sophisticated multi-tasking Wimp programs; just short non-Wimp examples to demonstrate a few points. My examples will mostly use graphics, so remember that for this purpose points on the screen are specified by two co-ordinates, an x and a y value. The origin (0,0) is at the bottom left-hand corner of the screen, and the screen measures 1280 units horizontally (0 to 1279) and 1024 units vertically (0 to 1023) in commonly used modes such as 12, 15 and 20, 21 (the dimensions are different in some other modes). Now have a look at the following program:

```
100 MODE 12
120 FOR I%=0 TO 15
130   GCOL I%
140   RECTANGLE FILL 200+24*I%,200,24,24
150 NEXT I%
160 REPEAT UNTIL FALSE
170 END
```

The program consists of a loop in which the value of the variable *I%* ranges from 0 to 15. Each time the loop is carried out, the GCOL number determines the colour to be used, and the RECTANGLE FILL command places a small square on the screen in that colour. The first two parameters of the RECTANGLE FILL command determine the position for the bottom left-hand corner of the square, so incorporating the value of I% here automatically moves each successive square to the right. The REPEAT-UNTIL instruction at line 160 just ensures that the display remains visible until you press Escape.

Try out the program. You can do this in two ways. If you have RISC OS 3 Edit, you can use this (as I described in RISC User 7:3) to create a Basic window, type in the program listing and then save to disc. Double-click on the program's icon to run the program. Alternatively, press F12 to exit from the Desktop, and in response to the star prompt type BASIC. You can then enter the program just the same, and run it by merely typing RUN. If you want to save the program, then the SAVE command will do the trick (e.g. type SAVE "My_Pro" or similar).

In either case you will see a strip of colours across the screen, the right-hand half flashing. There are in fact sixteen colours, eight steady and eight flashing. The left-most colour is not obvious because it is black, the same as the background. The colours which you see here are the standard default set of colours for any sixteen colour mode, and they are numbered 0 to 15 from left to right:

0	black	8	flashing black-white
1	red	9	flashing red-cyan
2	green	10	flashing green-magenta
3	yellow	11	flashing yellow-blue
4	blue	12	flashing blue-yellow
5	magenta	13	flashing magenta-green
6	cyan	14	flashing cyan-red
7	white	15	flashing white black

If you wonder, "Why this choice of colours?", well it's what the old BBC micro originally used, and the Arc was designed to use the same colours by default for compatibility.

There are a number of points to understand before we progress to more complex things. The GCOL command is followed by a number which determines which colour is to be used for subsequent graphics. If 128 is added to the number, then this determines the colour for the

background. Thus GCOL 128+6 (i.e. GCOL 134) specifies cyan for use as the background graphics colour. Similarly, the COLOUR command can be used to specify foreground and background colours for text.

The next point is crucial. The numbers used to represent colours can be used in two different ways. Think of the table above as a table of colours. Whenever we want to refer to blue, we must refer to colour 4. The GCOL command, on the other hand, can be likened to choosing a paint brush, and in these terms you can have up to sixteen paint brushes numbered 0 to 15. By default, brush number 0 is deemed to have been 'dipped' in paint number 0, and so on. But we can 'dip' any paint brush in any colour.

Add the following lines to the original, saving the new version under a different name:

```
101  COLOUR 8,7
102  COLOUR 9,6
103  COLOUR 10,5
104  COLOUR 11,4
105  COLOUR 12,3
106  COLOUR 13,2
107  COLOUR 14,1
108  COLOUR 15,0
```

If you run the new program, all the flashing colours should have disappeared, and the colour strip should be symmetrical about its centre. What has happened is as follows. Each of the COLOUR commands effectively specifies a brush and which colour it should be 'dipped' into. Thus the first line:

```
COLOUR 8,9
```

says take brush 8 and dip it in colour 7 (which is white). So when the GCOL command says to use brush number 7, it now paints in white rather than in the default flashing black-white.

However, although we can now dip our brushes in any of the available colours, our paintbox, or palette, is still limited to the same sixteen default colours. Now you should know that if you are in the Desktop, the sixteen colours being used are different. You can see what they are by clicking with the Select button over the Palette icon on the icon bar. Is it possible to use the same colours in our own programs, instead of the rather garish default ones? The answer, of course, is 'yes', and the solution is to change (or redefine) the colours in our paintbox.

In fact, we can choose from a massive 4096 different hues (that's 16*16*16), using an extended form of the COLOUR command:

```
COLOUR n,r,g,b
```

The values of 'r', 'g', and 'b' determine the amount of red, green and blue in the resulting mix, and each can take one of sixteen values in the range of 0 to 255. The first value ('n') is a colour in the range 0 to 15. Thus:

```
COLOUR 0,255,255,255
```

mixes maximum red, green and blue to define colour 0 as white, while:

```
COLOUR 0,0,0,0
```

mixes zero quantities of red, green and blue defining colour 0 to be black. Thus each of the sixteen colours numbered 0 to 15 can be redefined to be any of the possible 4096 colours. For reference, I've included a program on this month's magazine disc which gives you all the information you need.

Unfortunately, there is a confusing complication here. Although the values specified for 'r', 'g', and 'b' above can be anything in the range 0 to 255, there are only sixteen levels of each colour available. Thus changes in the resulting shade of colour only occur for changes of at least 16 units in the level of red, green or blue. To make using these values clearer there are various options. Writing them as 0*16, 1*16 etc. up to 15*16 is one.

To see all this in action, remove all the COLOUR commands which were added last time to the example program, and add the following instead:

```
101  COLOUR 0,255,255,255
102  COLOUR 1,221,221,221
103  COLOUR 2,187,187,187
104  COLOUR 3,153,153,153
105  COLOUR 4,119,119,119
106  COLOUR 5,85,85,85
107  COLOUR 6,51,51,51
108  COLOUR 7,0,0,0
109  COLOUR 8,0,68,153
110  COLOUR 9,238,238,0
111  COLOUR 10,0,204,0
112  COLOUR 11,221,0,0
113  COLOUR 12,238,238,187
114  COLOUR 13,85,136,0
115  COLOUR 14,255,187,0
116  COLOUR 15,0,187,255
```

Then run the new program as before, and this time our strip of colours should appear in the

continued on page 60

Investigator III £49.95

The new version of the highly successful Investigator II is a considerably expanded and improved package.

- Now includes not only the most powerful disc backup routines available but also a collection of other useful programmes:-
- A disc recovery package that will fix broken directories, undelete accidentally deleted files and lets you directly edit the disc contents - works with hard drives, floppy drives or other legal filing systems.
- A hard drive backup program that will backup from the hard drive - or other filecore system - to either floppy, syquest, tape streamer or other destination. The package is fully configurable and can backup just the changed files, by date or everything.
- A virus killer and detector that will detect and kill all current viruses. Warns you if an unauthorised attempt is made to access files such as !Boot files and will remove any existing infections for you. Configurable to be active at all times or only scan new discs.
- This combination of packages makes Investigator III the best disc utility suite available on the Acorn and makes sure that you won't get caught out by damaged data!

Desktop Tracker £49.95

"...programming at its best" - Acorn User January 1993

Continuing in the tradition of the immensely popular Tracker package, use Desktop Tracker to create fantastic tunes with no extra hardware.

Desktop Tracker has been completely rewritten to incorporate many new and innovative features:

- Up to 16 tracks
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- Real time effects include pitch bend, arpeggio, volume slide, phasor effects, note retriggering and many more.
- Powerful editing facilities, including transpose, cut and paste, echo and more.
- Score display allows you to see your tunes and samples in traditional stave notation format.
- Public Domain playroutines and jukebox to allow tunes to be played on any machine.

MIDI/Sampler Interface £79.95

A high quality sound sampler and Acorn compatible MIDI interface.

- Fits into the normally unused Econet socket - it does not waste an expansion slot.
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- All cables and software supplied.
- User friendly Pulse sampling software provided.

Printer Port Sampler £39.95

Compatible with all Acorn machines - plugs into the Parallel Printer Port.

"Pulse" software provided includes the following editing features - fade in/fade out, over and under sampling, zoom in/zoom out, save and edit marked section, play forward or backwards at normal or high speed.
Save in various file formats - Armadeus, Tracker, Sound Module.

QD Bug £69.00

"....a must for assembler programmers, and comes very highly recommended" Archimedes World May '93. (overall rating 95%).

QD Bug is the definitive debugger for all ARM coders both beginner and expert. It has many powerful features including: single stepping, skip and force instructions, SWI history lists and trapping, customised flexible windowing system, view BASIC sources and text files from within the program, keypress emulation with macro record and playback.

Please contact us for further details on QD Bug.

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All systems are CDFS and Acorn compatible. Cards are available in full size 16-bit format for the A5000/540/400/300 series or the smaller size for the A3000/3010/3020/4000 series. All the cards are very fast - top transfer speeds in excess of 2.8Mb per second - contact us for exact details of performance and specification if required.

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240Mb including card and all cables £389

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The PC Emulator Survival Guide (12)

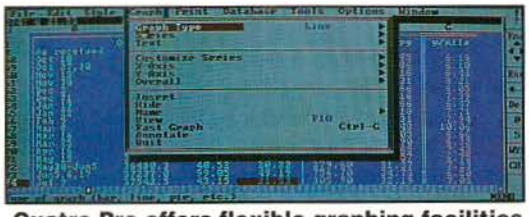
Gordon Gilmore looks at a selection of budget DOS software.

Since the PC was first conceived the PC world has changed out of all recognition. Processors have come and gone; Windows has come and, for better or for worse, stayed; and PC software has grown like Topsy. Most 'serious' PC word processors, spreadsheets and the like now demand vast amounts of RAM to run and file storage needs which would swamp the amount of hard disc space I can spare. Left behind in the wake of all this progress is a large amount of DOS software available at low cost. Some of this is freeware, some is shareware and some simply at a budget price. For this part of the Guide I decided to look at some of the budget offerings to see what they offer. At these prices it is not reasonable to expect too much, but useful programs can still be found.

Expert DOS Tutor

(Software Partners, £14.99 including VAT)

This DOS Tutor comes boxed with a 15 page manual. There is a simple installation program to copy all the files into a TUTOR subdirectory from where the program is run by typing DT. You then have an opportunity to select a colour or mono display, and whether or not you want sound, before the main menu is displayed. There are, in fact, few menu items which deal with DOS itself. There are items explaining the keyboard layout, an introduction to computers, binary and the like, input and output devices and a homily on structured programming. There's even a brief history of computing. The extra material would make it appropriate for the completely computer naive and those with absolutely no DOS knowledge at all. For those with some DOS under their belt perhaps it's too low key.

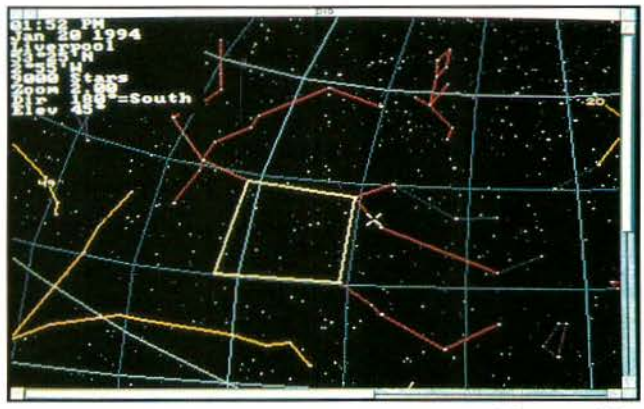


Quatro-Pro offers flexible graphing facilities (see page 58)

Skyglobe 3.0

(KlassM Software, $20 shareware)

This program again covers much the same scope as 'Night Sky' and Expert Astronomer. Unlike the latter I find myself running it from time to time just for fun. The display is attractive and the controls intuitive. A list can be kept on screen to remind you. To jump forward one month press 'M', to jump back Shift-M etc. There is a host of controls to select the way the Milky Way is displayed, whether or not planets are displayed and with or without names. The program can be set to run in accelerated time and with the star background fixed this provides a fine display of the retrograde motion of Mercury. Skyglobe comes with data for 25,000 objects.



Liverpool by night in Skyglobe

Unless you are using PC-Soft on an aged A310, I can recommend Skyglobe. It's shareware, so you can even try it out at very little cost before you buy.

Diet Expert

(Software Partners, £14.99 including VAT)

Diet expert is a tool to allow the enthusiastic dieter to keep track of his, or her, nutritional intake. I say enthusiastic because the whole thing takes an immense amount of setting up. You start by putting in your personal details such as height, weight, stature, sex etc. and, if you wish, target weight and a time span over which you wish to achieve it. That's the easy bit. You now have to put in information about your meals. There is a large data base of foods to pick from. Select 'curry' and a list will be displayed from which you can select the most appropriate type. Often the list for a general category will include proprietary brands but, this being a program from across the water, some are sometimes a little mysterious. If Marmite plays a major role in your diet then you won't find it in the list but the means to put it in yourself are provided.

Having put in a set of meals you can analyse your diet in some detail. You can display a histogram of the various nutrients in your diet, with an indication of whether you have over- or under-indulgent, and a breakdown of your protein/fat/carbohydrate intake relative to an optimum level. You can then find out what you need to do to balance your diet.

The program will keep track of your weight and, based upon your declared level of activity, advise you on whether you should take more exercise, or less food to keep to your target weight loss. I have to confess that I have no interest at all in losing weight (whether I should is another matter) and I found entering each meal a chore and soon gave up. Nevertheless, I found the analyses fascinating. Did you know, for example, that raw chopped mushrooms are 27% protein and 61% carbohydrate?

What the program will not do is work out your diet and your menus for you. There are some example menus in the manual but, since these include many American items, they are of limited use. If you are serious about dieting then it won't break the bank, give it a try.

Readers are invited to write in with their PC Emulator problems. We can't promise to solve them but we can try. Equally if readers have any particular favourite programs that they find useful let us know and we can pass on the information. In either case if the program in question is shareware or freeware it would help if a copy were enclosed with the letter.

MAC-IN-DOS 1.06 Copyright Pacific Micro, Inc. 1990,1991
12-5 Oct 93 23 <DIR>
12-6 Nov 93 24 <DIR>
Desktop 0 66445
Icon 0 2670
IBMBIO.COM 17867
IBMDOS.COM 40082
DOS <DIR>
COMMAND.COM 32816
CONFIG.SYS 163
AUTOEXEC.BAT 359
CLIKE.EXE 175374
CLIKE.HLP 7954
Active MAC functions. Press + for DOS functions
F1-Help F2-dir (MAC) F3-cd (MAC) F4-cd \ (MAC) F5-Format (MAC) Esc to
F6-mkdir (MAC) F7-rmdir (MAC) F8-del (MAC) F9-Copy Text F10-Copy(image) quit

Transferring files using MAC-IN-DOS

PRODUCT INFO

The 'Expert' programs are available from:
Software Partners,
Meadow Lane, St.Ives,
Cambs. PE17 4LG,
tel. 0480 497622

Skyglobe is available from shareware sources such as:
Nordic Systems,
Wolverhampton House,
121 Church St., St. Helens,
Merseyside WA9 1JS
tel. 0744 616466

Quattro-Pro is available from most PC software retailers or from:
Borland International
(UK) Ltd.,
8 Pavilions,
Ruscombe Business Park,
Twyford,
Berks. RG10 9NN,
tel. 0734 321150

Expert Astronomer

(Software Partners, £14.99 inc.VAT)

Until I read about Clares' Night Sky in RISC User 7:2 I wasn't aware of any astronomy programs for the Arc. Expert Astronomer covers much of the same ground as 'Night Sky' but probably not as well. The main limitation is that it needs a VGA display and is terribly slow on the normal PC Emulator. The facilities are limited compared to 'Night Sky' and only a little over 9000 objects catered for. While that is more than enough for me, perhaps that limits the appeal of Expert Astronomer for the enthusiast. I didn't like the controls or the menus particularly and couldn't easily relate to the display. However, others may disagree with me and at less than 1/5th of the cost of Night Sky, it may be of interest to those with a PC card and an occasional interest in astronomy.

MAC-IN-DOS

(Pacific Micro, available from HENSA)

This program deserves a special mention as it provides a facility which is not provided by any program written specifically for the Arc. As the name suggests, the program allows DOS machines to read and write to Apple Macintosh floppy discs. To use it, you will need an A5000 or later machine, or a machine that has been upgraded to use high density discs. The reason for this is that Macintosh double density disc drives use a variable speed mechanism, which cannot be emulated either by PC-compatibles or the Arc. When Apple upgraded to their *Superdrive* disc systems, they did not use the archaic format for high density discs, thus allowing programs like *MAC-IN-DOS* to read them. In use, *MAC-IN-DOS* is friendly and intuitive, coming with on-line help and using text-cell graphics to show windows on the DOS filing system and the Macintosh disc. File transfer is a simple matter of pressing a function key and entering any necessary filenames. Formatting of both Macintosh and DOS discs is possible and all filing system operations are provided for each. The program is obtainable from HENSA in the directory micros/ibmpc/dos. You must therefore have a means of connecting to Internet or JANET to get a copy. The program is shareware, you should contact Pacific Micro for the latest prices.

Quattro-Pro 5.0 for DOS

(Borland, £45 not including VAT)

I can't finish a review of budget software without mentioning Quattro-Pro. I have used it ever since it wasn't Pro at all and have upgraded eventually to version 4.0. The current version is 5.0. Even though there is a significant speed penalty, I have never felt a need to buy any of the Arc spreadsheets. Quattro-Pro contains more than most people will ever need in a spreadsheet and certainly much more than you can handle on the Emulator. Quattro-Pro works with many graphics adaptors from CGA or EGA, and with VGA you can get some impressive WYSIWYG displays.

Quattro-Pro can create files in a number of foreign formats which can give you compatibility with Lotus 1-2-3, Symphony and dBase. At the current price, if you need a spreadsheet and you have the Emulator it might be worth a look.

TECHNICAL QUERIES

Alan Wrigley answers your questions on saving to a file and minimising memory usage in the RMA.

Q *Dear Sir*
I have noticed that some programs save a block of data by using "OS_File" 10, while others use the OPENOUT and BPUT method. Which is better and why. ***Keith Vernon***

A SYS "OS_File" with a reason code of 10 enables you to save a complete block of memory with one instruction. The entire block is saved - you can't pick and choose sections of it. This is very useful for saving data if it is in one unbroken block and the format of the data on disc should be the same as in memory. For example, a text editor might maintain a document in memory in standard text file format (no application-specific character sequences, linefeeds marking the ends of lines etc.). The document can then be saved exactly as it is in memory using "OS_File" 10.

On the other hand, opening a file for output (using OPENOUT in Basic) allows you to write data to the file a byte at a time. Suppose that a DTP package has to output a section of a document as plain text. It is unlikely that the text is stored in memory as a block of printable characters - it will have style codes, font data etc. embedded at various places. In this case the application would open the file and then write to it either a byte at a time using BPUT#, or a small section at a time using "OS_GBPB". This method also allows you to update an existing file without completely overwriting it, since you can if necessary write to a specified location within the file.

You can of course use the latter method in place of "OS_File" when saving a complete block, but in general you will find "OS_File" easier and faster.

The same principles work in reverse, using OPENIN and BGET# to input a byte at a time, or "OS_File" 16 to load a complete file.

Q *Dear Sir*
I have noticed that the module area on my Arc is large even when I boot it (448K) and continues to increase in size during a session. Sometimes I have to reset the machine. What can I do to minimise the size and growth of the module area, and can I reclaim space without resetting? ***Richard Readings***

A The memory in the Relocatable Module Area (RMA) can be used for a number of purposes. First of all, its primary purpose is to provide a location for module code and any workspace needed by modules. Although in RISC OS 3 many more modules are in the ROM, and do not therefore need space in RAM for their code, the workspace is still in RAM since it must be accessible for writing as well as reading. About 260K is claimed for workspace by the resident ROM modules (ADFS needs 72K alone). But this is just the start. Expansion cards may well load supporting modules and claim workspace for them; on my own system, SCSI and CDFS filers plus an ArcLaser card eat up another 94K.

The final call on the RMA at start-up time will come from any applications that are installed as part of the boot sequence. If you are using NewLook, for instance, that's another 95K gone. ArtWorks requires a massive 200K in the RMA for various support modules, in addition to its application workspace. FaxPack can take up to another 260K.

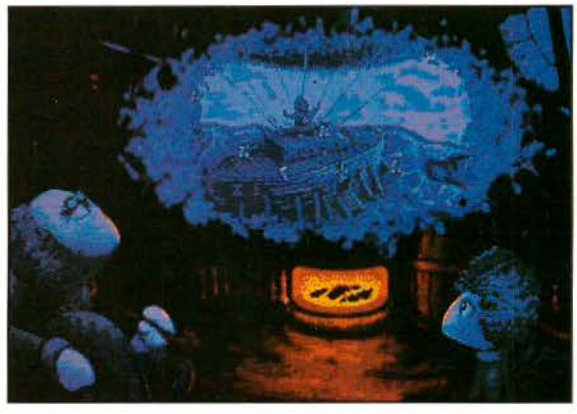
While you are using the computer, many more demands may be made on the RMA's memory. Each time you install an application, it may have a support module that needs to be loaded. Applications may claim space in the RMA for themselves, perhaps to store message files, or as a memory block that can be used as a private heap for document processing or any other purpose. ArcFS sometimes uses large amounts of memory from the RMA when archiving files, for instance. Even if these blocks are freed when no longer required, they may be locked into the RMA like holes in a piece of Gruyère if another block has been claimed since.

You can often reduce the size of the module area by dragging the slider bar in the Task Manager's window, but this will only work if there is free space at the end of the RMA. There is also a command **RMTidy* which compacts the RMA by relocating all the modules and gathering the free space together in one chunk. Unfortunately this requires modules to be well-behaved and allow themselves to be killed and reinitialised, and many badly written modules do not do this. In my experience, using **RMTidy* is very likely to cause the machine to crash.

If you run a lot of applications you can expect the RMA to expand, and there is not a lot you can do about it. To keep the expansion down to a minimum you could work with one application at a time and quit before running the next one. In most cases this should free the memory at the end of the RMA ready to be used by the next application. This does rather nullify the benefits of multi-tasking though.

Cont. from page 36

most of them. With your trusty crossbow, you have to travel through the mystical land of Lylvania in search of three evil warlocks. On your journey, you'll terminate the lives of many unfriendly creatures, collect loads of treasure, kill more baddies, and collect even more treasure - undemanding, and very addictive. A platform game, *Warlocks* has some of the best graphics, music and sound effects I've ever seen or heard in an Arc game. There are a couple of areas where it could be improved though. A password facility



to jump to previously completed levels would be useful, as would the ability to return to the Desktop without having to resort to Ctrl-Break. These apart, Warlocks gets a big thumbs-up!

JUICY INFORMATION

1994 should be a good year for games enthusiasts. Between them, GamesWare, Krisalis and Renegade will be converting several of the most popular PC and Amiga games to the Arc, including such illustrious titles as *Striker*, *Dune 2*, *Daughter of Serpents*, *Rome AD*, *Cannon Fodder*, *SpeedBall 2*, *Powermonger*, *Chaos Engine* and *Fire and Ice*, and Electronic Arts could release *Wing Commander* for the Arc. I'm not going to make any predictions as to when these games might be released, however. *Simon the Sorcerer* and *Lemmings 2* were going to be out by Christmas 1993; it's now the middle of February and I'm still waiting for review copies!

uR

Into the Arc
(continued from p. 55)

standard Desktop colours. Since the background, by default, also uses colour 0 this has changed as well. You can add a further line:

```
117 GCOL 7+128:CLG
```

to clear the background to colour 7 (black).

If you wondered how on earth I managed to work out all the numbers I used in the program, the answer is I didn't. Instead I used Paint, creating a new blank sprite. I then selected the *Paint* option in Paint's main menu, followed by *Edit palette*. Clicking in turn on each of the colours in the resulting window gave the corresponding numbers which I used above.

In fact, if you want to use the standard Desktop palette, there is a much easier way than the above. From within the Desktop, click with the Select button over the Palette icon on the icon bar. Use the *save* option to save the palette to disc with a name of your choice (or use the default, !Palette). All the COLOUR instructions in lines 101 to 116 above can then be replaced by the single instruction of the form:

```
* <Pathname>.!Palette
```

If you don't use MODE, the Desktop palette will be immediately available anyway.

Lastly, to answer a question raised by the original correspondent, if you move from the defaults to your own choice of colours for your paint brushes, then anything like changing mode, even from one 16 colour mode to another, will lose all those carefully prepared colours, and you'll find everything has reverted back to the defaults. This is why, particularly if experimenting in unfamiliar territory, those horrible flashing colours can suddenly appear - you've somehow destroyed or lost a carefully defined palette. The fact that the Desktop always appears in its own standard range of colours is because this palette is defined by RISC OS for the Desktop at start up. You can change the Desktop palette if you so wish, and you may initially find this amusing. However, all commercial and most other applications are designed to look good with the standard Desktop colours, so I recommend you stick with them too.

If you have found this month's topic for *Into the Arc* helpful, then write and let me know. Tell me what other topics puzzle you, or for which you would like more help and information, and I'll see what I can do.

uR

Revolution.
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The Morley **Revolution** is the ultimate plug-in-and-go CD-ROM drive solution for Acorn 32bit computers.

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The **Revolution** matches the capabilities of far more expensive drives. It is Replay, multisession and Kodak Photo CD compatible, operates via Acorn's CDFS and is compatible with existing hardware running RISC OS 3. It can also use all available RISC OS based CD-ROMs, as well as access DOS based discs and run them through emulation. It even plays audio CDs!

Contact us for more details about the Morley **Revolution** CD-ROM or place your order and join the **Revolution** now.

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Wimp Topics - A Flexible Memory Manager

Alan Wrigley describes a useful method of allocating memory from within your own programs.

Among the most frequent questions asked by readers are those concerned with creating and managing blocks of memory, for example to load or process files. We have covered this topic more than once in recent issues (see in particular *Technical Queries*, RISC User 5:4 and 7:1), but in this month's *Wimp Topics* I want to expand the idea into a fully-fledged memory manager which you can use in your programs to allocate memory for any purpose at any time. The routines are listed in Basic, but the principle can easily be adapted for Assembler programs. If you are writing in C, however, facilities such as flex are available and you would not normally need to include your own memory management routines.

MEMORY MANAGER

The routines which make up the memory manager make use of a facility already provided by RISC OS, in the form of the Heap Manager. The Heap Manager allows you to declare any chunk of memory as a private heap and then manages that heap for you, allocating, deallocating and resizing blocks within the heap, or indeed resizing the heap itself, on receipt of a call to SWI "OS_Heap" from your application with the appropriate reason code. This means that you can use one area of memory for all your dynamic storage requirements - loading document files, storing sprites or message files, temporary storage for calculation results and so on - and rely on the Heap Manager to decide where it should go and to return a pointer to the block to enable you to access it.

Of course, you have to supply the memory for the heap in the first place. The *Technical Queries* articles mentioned above considered the various ways in which memory can be found. To recap briefly, there are three main methods. Firstly you can dimension a block within your program using the DIM statement. Secondly you can claim a block of memory from the RMA. Thirdly you can increase the application workspace and use all the extra memory (whose existence will be unknown to Basic) as your storage area. The first method is not suitable for an expanding and contracting heap since once you have DIMmed a block the size cannot be altered. The second method would be suitable for small chunks of memory, but when used with larger blocks (for processing documents, for example) you could end up with large unused 'holes' in the RMA which take up space and can't be released. We will therefore concentrate in this article on the third method, which involves using the SWI "Wimp_SlotSize" to increase or decrease the application workspace.

The primary routines listed below are *FNallocate*, which requests a block of memory from the heap (and sets up the heap in the first place if it doesn't already exist); *PROCdeallocate* which frees a heap block; and *PROCalterblock* which extends or shrinks a heap block. In all cases application workspace is increased (subject to memory limitations) if the heap requires more memory, and decreased if at all possible whenever the heap requires less. Thus the routines implement what is known as a *contracting heap*. Three other procedures are needed by the memory manager - *PROCsetupheap*, *PROCgetmemory* and *PROClosememory;* their names indicate their functions.

The full set of routines required for the memory manager is given in Listing 1. You could add these to the code of any of your programs, or alternatively you could include them in a library (as an addition to RISC User's *WimpLib* for example) and use the LIBRARY command at the start of your program. Take great care when entering the listing; in particular you should note that many of the SYS calls have multiple commas.

Listing 1

```
1000 DEF FNallocate(size%)
1010 errflag%=0
1020 IF heap%=0 PROCsetupheap(size%+16)
1030 IF NOT errflag% THEN
1040  SYS "XOS_Heap",1,heap% TO ,,free%
1050  IF free%<size% PROCgetmemory(size %-
free%,1)
1060  IF NOT errflag% THEN
1070   SYS "XOS_Heap",2,heap%,,size% TO
,,ptr%
1080  ENDIF
```

```
1090 ENDIF
1100 IF errflag% THEN =0 ELSE =ptr%

2000 DEF PROCdeallocate(ptr%)
2010 SYS "XOS_Heap",3,heap%,ptr%
2020 PROClosememory
2030 ENDPROC

3000 DEF PROCalterblock(RETURN ptr%,size%)
3010 errflag%=0:REPEAT
3020  SYS "XOS_Heap",4,heap%,ptr%,size%
TO ,,ptr%;flag%
3030  IF flag% AND 1 PROCgetmemory(page %,1)
3040 UNTIL (flag% AND 1)=0 OR errflag%= TRUE
3050 IF NOT errflag% THEN
3060  IF size%<0 PROClosememory
3070 ENDIF
3080 ENDPROC

4000 DEF PROCgetmemory(mem%,x%)
4010 SYS "Wimp_SlotSize",appsize%+mem%, -1
TO new%
4020 IF new%<appsize%+mem% THEN
4030  errflag%=TRUE
4040  PROCerror("Not enough memory")
4050  SYS "Wimp_SlotSize",appsize%,-1
4060 ELSE
4070  IF x% SYS "XOS_Heap",5,heap%,,new %-
appsize%
4080  heapsize%=new%+&8000-HIMEM
4090  appsize%=new%
4100 ENDIF
4110 ENDPROC

5000 DEF PROClosememory
5010 REPEAT
5020 SYS "XOS_Heap",5,heap%,,-page% TO
,,,s%;flag%
5030 IF flag% AND 1 THEN
5040  SYS "XOS_Heap",5,heap%,,s%
5050 ELSE
5060  SYS "Wimp_SlotSize",appsize%-page
%,-1
5070  appsize%-=page%:heapsize%-=page%
5080 ENDIF
5090 UNTIL flag% AND 1
5100 ENDPROC

6000 DEF PROCsetupheap(initsize%)
6010 PROCgetmemory(initsize%,0)
6020 IF NOT errflag% THEN
6030  heap%=HIMEM
6040  SYS "XOS_Heap",0,heap%,,heapsize%
6050 ENDIF
6060 ENDPROC
```

USING THE MEMORY MANAGER

Before you can use the routines, three variables, *heap%*, *appsize%* and *page%*, need to be initialised at the start of the program as follows:

```
appsize%=HIMEM-&8000
heap%=0
SYS "OS_ReadMemMapInfo" TO page%
```

It is also assumed that you have a procedure called *PROCerror* which reports errors without terminating the program. This is called by the memory manager if there is insufficient memory at any time to increase the application workspace.

To use the memory manager, you must first call *FNallocate* with the size of block you require. The first time you try to allocate a block the heap will not exist, so in this instance a call is made automatically to *PROCsetupheap*. This claims more application workspace by calling in turn *PROCgetmemory*, and provided no error occurs it then initialises a heap starting at HIMEM and extending for the whole length of the extra workspace, by using OS_Heap 0. As far as Basic is concerned everything still stops at HIMEM, so the heap will always remain for your use only and should never be corrupted by Basic or other applications.

You will notice from line 1020 that the initial size of the heap must be at least 16 bytes larger than the size you think you need. This is because the heap requires a 16-byte header block, and this is included in the size requested for the heap. Heap blocks also require headers (8 bytes each) but in this case the Heap Manager adds this onto the required size. In other words, if you initialise a heap with 100 bytes, only 84 will be available for allocation; if you then request a 32-byte block within the heap the Heap Manager will actually set aside 40 bytes (though you can only use 32 of them).

The allocation function then continues by initialising a block within the heap using OS_Heap 2. This returns a pointer to the block, which is returned by the function. This pointer can then be used in your program to access the block. The pointer points to the first byte after the header, i.e. the first one that you can use..

Subsequent calls to *FNallocate* in order to allocate further blocks do not need to set up the heap. In this case, OS_Heap 1 is first used to see if the heap has enough space for the allocation. If not, *PROCgetmemory* is called again to increase the

application workspace further. This process can go on if necessary until there is no more memory available in the computer, so you can continue to use the function to claim blocks from the heap for any purpose, safe in the knowledge that all spare memory is available to you if required.

If you need to extend a block at any time, or conversely if circumstances permit it to be shrunk, you can alter its size by calling *PROCalterblock*. This has two parameters, the first of which is the pointer to the block as originally returned by *FNallocate*. The second parameter is the new size *relative to the old size*. In other words, the value can be either positive or negative. For example, to alter a 2000-byte block to 3000 bytes, the value supplied would be 1000, and to alter the same block to 1000 bytes it would be -1000. OS_Heap 4 is called to alter the size of the block. If there is not enough space to extend it in its current position, the Heap Manager will try to move it elsewhere in the heap. If an error is generated, indicating that an extension is impossible, *PROCgetmemory* is called to increase the size of the workspace and thus the heap, and another attempt is made to extend the block. If on the other hand the block is shrunk by the call to *PROCalterblock*, an attempt is made to reduce the size of the application workspace if this is possible (which it may not be if the shrinkage doesn't take the size across a page boundary, or if there are other blocks in the heap above the one being shrunk).

If the block is moved around in the course of being altered, the original pointer will obviously no longer be valid. For this reason the Heap Manager returns a new pointer when OS_Heap 4 is called, and this is returned to the application by the use of the keyword RETURN before the procedure's second parameter. It goes without saying, therefore, that whenever you access memory blocks which have been allocated by the memory manager you should always specify an offset to the pointer.

Finally, when you have finished with a block, you should call *PROCdeallocate* with the block pointer as the parameter. This procedure tells the Heap Manager to free the block within the heap, and then attempts to contract the heap by a page of memory at a time. If successful, the application workspace is also decreased by the same amount. This ensures that the memory used by the application is never more than is needed for the current requirements of the heap, while at the same time ensuring that all the current workspace is available to the heap.

You should find the memory manager very useful in your programs, since in addition to the obvious uses such as loading document files, there are often many other short-term requirements for blocks of memory while executing a program. Using the memory manager may mean that your program can initially be run in a smaller Wimp slot, since you don't need to include space for dimensioned blocks which might only be used rarely while the program is running. With machine code programs you might even get away without any increase in the Wimp slot at all during execution. This is because with a machine code program you will know the exact length of the code and data areas used by the program, so what remains can be given over to the heap. For example, if your program together with its built-in storage areas is 25K long, then allowing, say, 1K for your stack still gives you 6K spare from a 32K slot. If you place the stack immediately above the program and then start the heap at the top of the stack, the memory manager can use that 6K before it needs to increase the workspace.

However, the routines listed here do have one drawback. Although they implement a contracting heap, which means that wherever possible memory is returned to the computer when no longer required, there are still situations where memory is wasted. For example, suppose that you ask for a block of memory 100K long, followed by another which is 1K long. If you then release the 100K block, the memory is freed within the heap, but the heap itself cannot be shrunk because the 1K block would have to be moved. The Heap Manager cannot do this, since the application using the heap would have no way of knowing that its pointer was no longer correct.

To get around this problem, you need what is known as a *shifting heap*. Unfortunately the Heap Manager is not designed to implement shifting heaps (though the *flex* routine in C does so). To achieve this you would need to write your own heap manager, which would of course introduce a much greater degree of complexity into the program. Perhaps RISC User will return to this topic one day.

This month's magazine disc contains the full set of procedures listed in this article, in a form which enables them to be included in WimpLib.

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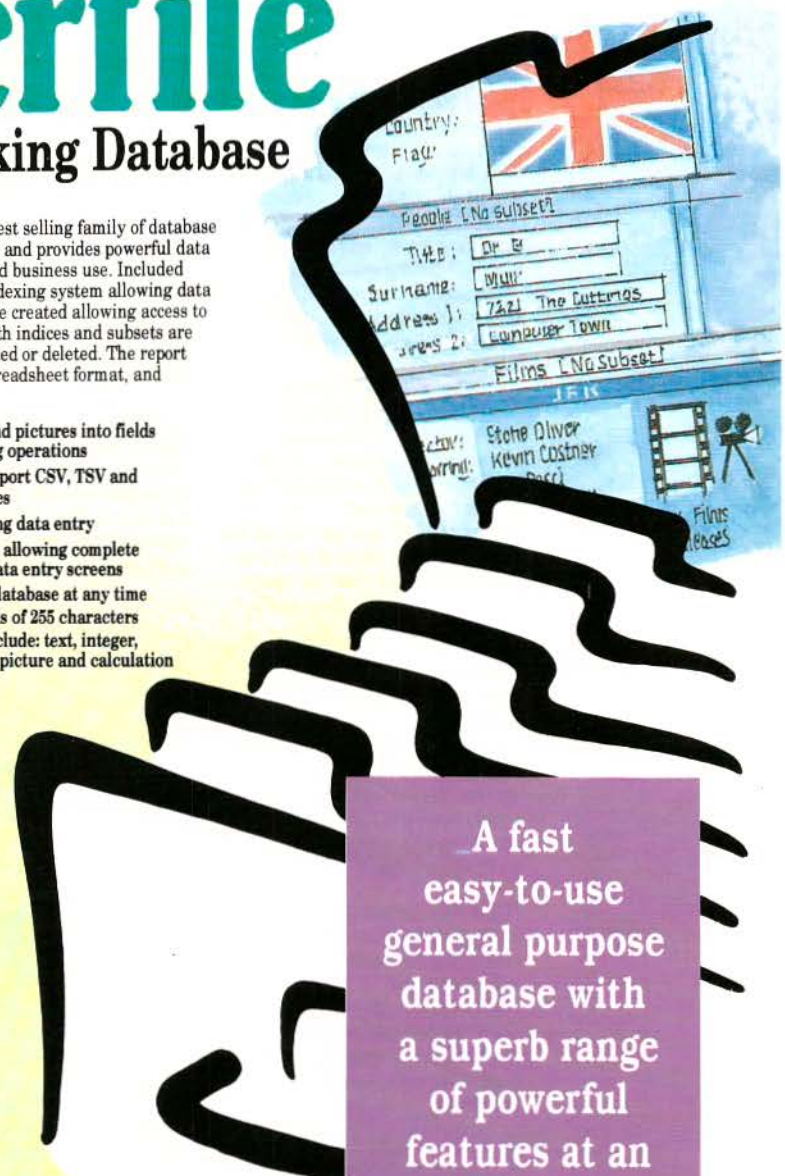

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WRITE - BACK

MULTI-TASKING TO THE FORE

I refer to the news item on page 6 of RISC User 7:3 entitled ***Start the New Year with Ovation.***

I purchased ny A5000 two years ago. Before that I was using Pagemaker 4 on an Apple Macintosh. My first impression of Impression (oops!) was, like that of the head teacher in the article, one of disappointment that there were no drawing tools. Quickly becoming familiar with both the RISC OS multi-tasking environment and Impression, I soon realised the advantage of having applications like Draw ready to hand in ROM.

As a science teacher, I use my Acorn heavily to produce worksheets, record formats etc. I have absolutely no problem using Draw in parallel with Impression to complement the latter's excellent word processing/DTP features. I would find it very easy as, I am sure Mr.Kidner would, to create a calendar master page just like the one produced in Ovation, but using Draw.

Recently I upgraded to Impression Style. This new version implements the OLE system, in which graphics can be exported directly to Draw for editing and then re-imported to the document being worked on. This makes the interaction of Impression and complementary applications such as Draw even easier.

Rather than bemoan lacking features in applications such as Impression, I now look at new applications to see what wasted effort there is in duplicating features of Draw etc. Comment has already been made in the Acorn press regarding this in the case of Fireworkz from Colton Software.

George Reid

Efficient multi-tasking versus duplicated features - is that the only issue in this argument or are there any other factors which might influence any debate? What do you think?

BASIC IN A TASK WINDOW

In reply to Christopher Binge's letter in Write-Back RISC User 7:3, there ***is*** *a version of Task windows which also allows graphics - for example from a Basic or from a C program. Its name is TASKW and it is available (through Internet) via* ***anonymous ftp to ftp.uni-stuttgart.de*** *in directory* ***/pubs/systems/acorn/util/sys****. I recall that it was made available by someone in Moscow - it shows how far Acorns have travelled! There are also other versions, but I couldn't get them to work.*

By the way, both this machine and ***micros.hensa.ac.uk*** *(at the University of Lancaster) has huge PD libraries for a variety of machines, and Acorn's RISC OS is well represented, but it does require access to Internet.*

David Siegwart

Accessing Stuttgart may be relatively expensive, and we are currently evaluating an alternative program to do the job from the University of Lancaster. We will be including this in our PD library when we have checked it out and satisfied ourselves as to its provenance. Details will appear on the PD page when available.

BACK TO BASICS GOES AWRY

*I have been programming computers for many years, and after reading your recent article introducing beginners to programming (****Into the Arc****, RISC User 7:3) I was disappointed to find that an item which could have been so wide reaching ultimately fell foul of the current plague of RISC OS 3. I refer to the example program, which apparently should be entered using Edit. Being an Edit version 1 owner I find myself with no* ***Basic*** *option from the* ***Create*** *menu. Any beginner in this position who had the inexperience of programming described at the start of the article would no doubt have been put off programming for life.*

*Frankly, I find the Edit system for programming rather tedious; surely it is far simpler to access basic with *Basic from the command line? This way there is no need to save your program every time you want to test it. This can be done on every Arc without the need for other software which I imagine a large percentage of Arc owners don't have. If Mike Williams wants to get back to basics, I suggest he drags himself away from RISC OS 3 and dusts off an A3000.*

Daniel O'Connor

Yes, Daniel O'Connor is quite right in that I did overlook the fact that an option to create a Basic program is not available in Edit under RISC OS 2. However, all new users over the last twelve months or so will have received RISC OS 3 as standard in their machine, and we have always very much encouraged readers to upgrade to this version of the operating system (Edit is then much more conveniently in ROM anyway).

Also, as the point of the article was to provide a simple way for inexperienced users to try a small program in Basic, I didn't really want to explain about life outside of the Desktop. However, if you do still have RISC OS 2, then Mr.O'Connor's approach is probably the simplest way of trying out a program, but you should still save first in case a mis-typing causes the program to be corrupted.

FAILINGS OF PD FONT LIBRARIES

Although their offerings are absurdly cheap, I nevertheless reckon that some PD suppliers bend the Trades Description Act quite a bit when they advertise "xx dozen fonts" for "only y pounds". In my experience most such fonts contain nothing like a full set of characters. I grant that many display

fonts are not suitable for body text or maths equations, and thus do not need ligature, accented, fraction or operand (sic) characters - but to describe just an upper-case alphabet, without even numerals or punctuation characters, as a "font" is dishonest and misleading.

At the other extreme one gets, for example, a set of totally anachronistic and incongruous Arabic numerals with an uncial alphabet (similar to modern 'capital' letters); it is quite obvious that some of the perpetrators of these PD fonts have little knowledge of typographic history or design. "Janet", whoever designed it, is particularly horrible in its appalling rendition of manuscript pen-strokes.

Professional computer type designers, such as EFF, may well chorus "Serve you right!" and I concur - if one wants quality goods one should be prepared to pay for them. Nevertheless, low prices do not entitle PD firms to bundle a host of badly designed or incomplete fonts with one or two good ones, and masquerade them as full sets of quality characters.

B.Land

While sympathetic to Mr.Land's views regarding advertising copy and the Trades Description Act, I feel he is being a little too hard as far as PD software distributors are concerned. After all, such libraries are distributed as a service, and not as source of income. Nevertheless, such libraries do obviously need to be reasonably accurate in the descriptions of the software and other items which they advertise. I believe that to some extent it is the terminology which is at fault. The tern 'font', certainly as used in the Acorn world, is not really that specific. How many styles does a font provide? What alphabet does it implement, in full or in part? Without such universally agreed definitions, any description is open to a degree of individual interpretation.

PIN BOARD

HELP WANTED

The "Printer on line" procedure in RISC User 6:4 page 43 works well with a variety of printers and machines. The only occasion that it is unreliable is with an A5000 and Star LC24-10 when the printer is switched off (i.e. not even on line). The results are erratic and leads to a hung machine. What is so different about a Star?

Keith Vernon

We have been unable to test this out on the particular combination of machine and printer used by Mr.Vernon. Can any other reader throw any light on this query?

UPDATE

In publishing a letter from Tom Waller in the Pin Board section of Wrie-Back of the Jan/Feb issue of RISC (7:3) we misquoted his telephone number. The correct version is 0651 891785.

Desktop C (continued from page 50)

number of other support functions that are documented in the ANSI C User Guide.

LOADING DATA

There are two possibilities for loading a file by dragging - namely the file is imported from another application, or the file is dragged in from a directory viewer. In the first case the Data Transfer Protocol is used in exactly the same way as saving from one application to another, but this time viewed from the recipient's perspective. In the second case a simplified form of the Data Transfer Protocol is used with the Filer sending the DataLoad message to the recipient, which then loads the file and returns a DataLoadAck message.

To detect load operations, the application's event handler must check for user messages (reason codes wimp_ESEND and wimp_ESENDWANTACK) and in the case of the message being a DataSave or a DataLoad, call a function to load the data, making use of other functions declared in *xferrecv.h*.

In the simplest case, where direct RAM transfer (the subject for next month) is not required, the loading process should start with a call to the function:

```
int xferrecv_checkinsert(char **name)
```

This performs all the niceties of the Data Transfer Protocol and stores the pathname of the file to load in the buffer specified in the call. Note that the parameter passed in is a pointer to a pointer to char, in order to allow it to be modified. In other words, something like:

```
char *toload;
type = xferrecv_checkimport(&toload)
```

which will leave *toload* pointing to the pathname. This avoids the application having to provide its own buffer for the name.

The value returned by the function *xferrecv_checkinsert()* is the filetype of the file being offered. If the type of the file is acceptable then the application should load it using the normal filing system calls and then call *xferrecv_insertfileok()*, which takes no parameters. This last call finishes off the Data Transfer Protocol bits and deletes the <Wimp$Scrap> file if it was created.

That's it for this rather heavy-going month. In the next Desktop C we will finish looking at the Data Transfer Protocol by dealing with direct RAM transfers and the loading of files by double-clicking on them, and also give an example program.

PRO : Artisan 2

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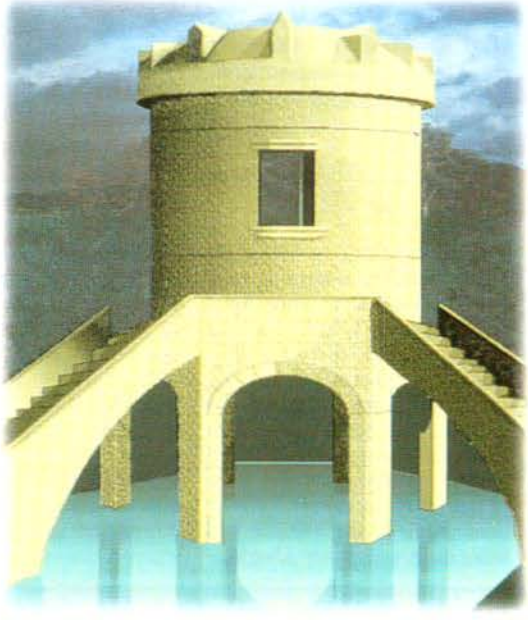

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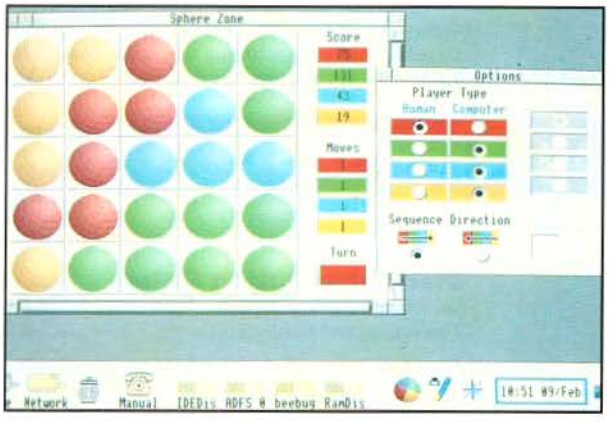
SphereZone

by Jonathan Hunt

Are you fed up? Do you have nothing to do? Have you a tense, nervous, headache? These are the symptoms of boredom. Now RISC User brings you SphereZone; the power to hit boredom hard. Just place the icon on your icon bar for fast, effective relief.



The object of SphereZone is to create lines of coloured anti-boredom pills. Naturally, the longer and more numerous the lines, the more you will score. You have four players, each of which can be either a human or a computer player. Each player puts a pill on the grid in turn. Placing a pill in an empty location will leave one of that player's colour there. Dropping a pill where another already exists will leave one that is the next colour on in the cycle from the existing pill. After a predetermined number of turns, the game will cease and the winner will be announced, being the highest scorer of the game. The game is fully configurable, so that the number of rounds can be set as well as which player has the first turn and in what order the colours cycle. The sound effects can also be turned on and off.

Remember - SphereZone does not cause drowsiness. It can only help tedium loss as part of a monotony controlled diet.

DeskTidy

by Jo Calcraft

While many applications have eye-catching icons to represent them on screen, the same is not true for directories, with the standard blue 'folder' being all that is normally available. Moreover, the uniformity of the icons makes selection of individual folders more difficult. DeskTidy provides a way of brightening up your Desktop, with a selection of high quality sprites, which can be used to good effect to organise all your files in a much more appealing and recognisable way. It will also result in a much speedier start-up sequence because only master directories will be opened when you view your root directory.

For reasons of space, both of these applications appear only on this month's magazine disc.

DeskTidy works by providing a dozen dummy applications, each representing a particular topic or category, and each with its own sprite. Just move your files and directories into the appropriate dummy application, and keep these in your root directory. For even greater convenience, you can also paste them on to the Pinboard or your choice of backdrop.

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▼ Lots of Archimedes games for sale £10-£15. Tel. Stevenage 0438 723471.

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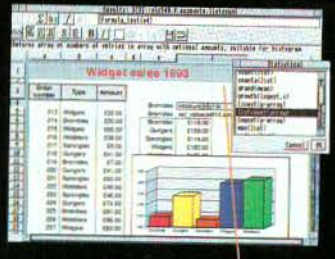

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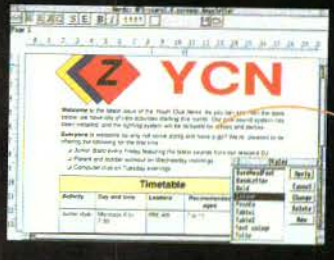

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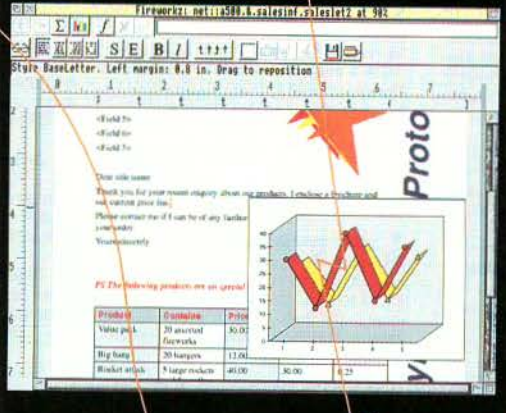

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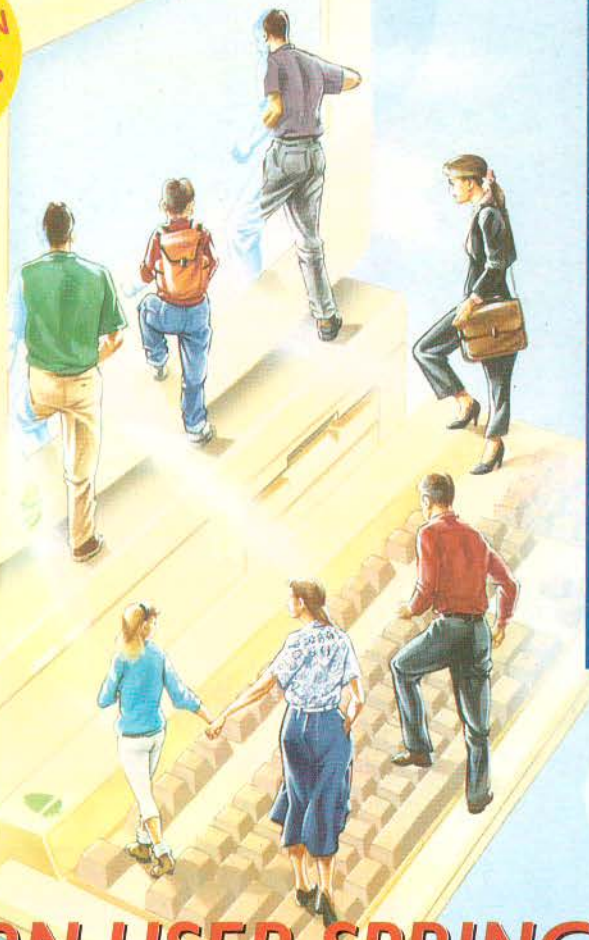

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